

NICO ORGO

An ISO 9001:2008 certified company





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Orgo Neem

Neem Seed Fertilizer

Fertilizer, Nitrification Inhibitor & Pest Repellent



Organic amendment for use in Agriculture, Horticulture, Floriculture and Turf Management

Nutrient Content

Organic matter	70-80%
Nitrogen	2.50 – 3.5 %
Phosphorous	0.50 – 1.0%
Potassium	1.25 – 1.5%
Calcium	0.75 – 1.0%
Magnesium	0.75 %
Sulphur	1.2 – 1.5%.

ORGO NEEM is a natural organic fertilizer approved for use in organic systems by Organic Farmers & Growers (UK), OMRI (USA) and EcoCert. It has shown tremendous potential as a fertilizer and is widely used for sustainable agriculture as well as horticulture application. When ploughed into or mixed with the soil, **ORGO NEEM** acts naturally as a broad spectrum defense mechanism working against a wide variety of phytonematodes and soil borne insect-pests, thereby improving root development and, in turn, plant growth and yield.

This dual activity of **ORGO NEEM** as a fertilizer and a pest repellent has made it a favoured input and it is widely used in the cultivation of cash crops.

Eco-Friendly Advantages

- It is a wholly organic plant food which increases productivity, soil fertility and soil health. The application of **ORGO NEEM** to crops provides them with various essential nutrients and prevents and treats ailment disorders of plants due to the lack or imbalance of nutritious trace elements.
- It helps to increase the uptake of nutrients by the plant and improves yield as the nutrients are released into the soil uniformly and over a longer period of time unlike in the case of conventional fertilizers.
- It is active in increasing growth and foliage, resulting in rich blossoming and strengthening of the roots, all of which help to improve the general appearance and quality of fruits and vegetables.
- It protects the crop against damage caused by soil insect-pests, fungi, bacteria and nematodes by way of reducing the numbers of such pathogenic organisms.
- Studies conducted by the Indian Institute of Horticultural Research, Bangalore, have shown that an application of Neem seed fertilizer on nursery beds can **reduce Root-knot and Reniform nematodes by more than 80%**, thus resulting in healthy and vigorous seedlings/saplings. In protecting young plants from insect-pests, **ORGO NEEM** allows them to grow sufficiently and build their natural defenses and augments them with its nutritional and pest repellent properties.



- It can also **reduce alkalinity** in the soil by producing organic acids when mixed with the soil. The calcium and magnesium present in it also assist in reducing alkalinity.
- **It acts as an excellent nitrification inhibitor.** By curbing the activity of nitrifying bacteria like Nitrosomonas and Nitrobacter, it reduces the nitrification rate which ensures availability and controlled release of Nitrogen required by the crop during its critical growth stage. Hence by blending with chemical fertilizers (UREA, DAP, etc.), the use of these chemical fertilizers can be reduced by up to 30%.
- It boosts the population of beneficial micro flora and fauna in the soil.
- **ORGO NEEM** is safe for earthworms and, in fact, an increase of more than 20% in their population has been reported.

Application Guidelines:

Working **ORGO NEEM** into the soil by ploughing and mixing with the soil gives better results than surface application. Apply with any standard fertilizer spreader and incorporate into top 10-15 cm of soil.

ORGO NEEM can be used by itself or can be combined with chemical fertilizers or organic manures such as farm yard manure, poultry manure, compost, press mud, etc. Though we recommend mixing at least 25-50% of **ORGO NEEM**, even as little as 10% shows excellent results. The quantity of chemical fertilizers can gradually be reduced.

It can also be combined with potting compost for better results.



Dosage:

350 - 500 kg per hectare

Formulation:

Available in pellet form, granulated and as a coarse powder

Packaging:

1 ton jumbo bag
50 kg HDPE / LDPE bag
25 kg HDPE / LDPE bag

For gardens:

8 kg plastic bucket
2 kg plastic bucket
2 kg Cardboard box

Storage:

Store in a cool, dry & covered place.
Do not store in direct sunlight.



POWDER



PELLETS



GRANULES





Orgo

Blended Organic Fertiliser

ORGO is made by scientifically blending natural organic substances in such a way as to provide the nutrients and micronutrients necessary for crop growth and soil health/fertility. Nutrients such as Nitrogen, Phosphorus, Potassium, Sulphur, Calcium, Magnesium as well as Iron, Zinc, Copper, etc are contained in **ORGO**. With an organic content of 65% (minimum), **ORGO** performs the important function of preserving the organic, chemical and physical characteristics of the soil. The fertility of the soil increases and it becomes soft and porous. The humidity is also protected.

ORGO can be used by itself or can be blended with conventional fertilizers to augment the results and improve soil fertility.

Nutrient Content:	Premium	Regular
Organic matter	65 – 85 %	12 % organic carbon
Nitrogen (N)	2.75 - 3.75 %	0.5 % (min)
Phosphorus (P ₂ O ₅)	2.5 – 3.5 %,	0.5 % (min)
Potassium (K ₂ O)	1.0 – 3.0 %	0.5 % (min)
Calcium (CaO)	2.1 – 2.8 %	-
pH	6 -7	6.5 to 7.5
C/N Ratio	<15	<20

It also contains micronutrients such as Iron – Zinc – Magnesium– Manganese, etc. in ppms



ORGO has a three tier effect on soil

- 1) Supplies Nutrients
- (2) Protects soil health
- (3) Conditions Soil

It increases enzymatic activity in the plant giving rise to increased chlorophyll synthesis. This results in **Lush Green Growth** in the plant which increases solar energy utilization and thus boosts the net photosynthesis and crop growth at key stages.

A natural growth promoter present in **ORGO** helps to enhance plant growth in a natural way. This allows plants to make sufficient use of available moisture and plant nutrients to enhance crop growth at key stages.

ORGO minimizes the use of synthetic pesticides because of the presence of natural repellents in its formulation and due to the presence of bio-active oil cakes of Neem, Castor and Karanj.

ORGO contains some natural soil nitrification inhibitors like Epinimbin (Neem Cake) and Karanj (Karanj Cake). These bio-chemicals minimize nitrification, leaching and run off.

ORGO remains in the root-zone for a longer time, therefore plants can make more efficient and effective use of available nutrients. Its use leads to consistently improved crop yields from 5-25% or more.





Using **ORGO** in the fertilizer mix (suggested dose 50:50) reduces the need for split application of inorganic/chemical fertilizers, thus assuring overall economy in production as well as minimizing environmental pollution through leaching loss and ground water contamination.

The use of **ORGO** helps produce a good harvest, particularly of fruits and vegetables which are nutritionally superior, taste better, have good lustre & better keeping quality.



Application Guidelines:

- Recommended as a basal dose followed by a 2nd application in mid season.
- Working **ORGO** into the soil by ploughing and mixing with the soil gives better results than surface application.
- Apply with any standard fertilizer spreader and incorporate into the top 10-15 cm of the soil.
- **ORGO** can be used by itself or can be combined with chemical fertilizers or other organic fertilizers such as farm yard manure, poultry manure, compost, etc. The quantity of chemical fertilizers may be reduced gradually.
- **ORGO** can also be combined with potting compost for good results.
- A soil application of **ORGO** combined with NICODERMA (*Trichoderma viride* 1% w.p) or BIONICONEMA (*Paecilomyces lilacinus* 1% w.p) helps to manage soil borne pathogens and nematodes.



Dosage:

650 kg/hectare

Formulation:

Available in pellet form, granulated and as a coarse powder

Packaging:

1 ton jumbo bag
50 kg HDPE /LDPE bag
25 kg HDPE/LDPE bag

For gardens:

8 kg plastic bucket
2 kg plastic bucket
2 kg cardboard box

Storage:

Store in cool & dry place away from direct sunlight.

On request we can blend our range of Biofertilisers into Orgo



Jaivik

Enriched Organic Fertilizer

JAIVIK is a scientifically blended organic fertilizer enriched with bio-agent *Trichoderma viride*.

This combination of nutrients and micronutrients along with the bio agent *Trichoderma viride* results in the all-round healthy growth of the plant.

Studies conducted by the Gujarat Agricultural University, Anand, Gujarat, India, have shown that the particular bio agent present in **JAIVIK** has natural fungicidal properties.

Field experiments conducted at our R&D farm and universities across India have shown **JAIVIK** to be very effective against fungal diseases such as:

- Root-rot
- Damping-off
- Seedling rot
- Fusarium wilt
- Collar rot

JAIVIK offers an excellent combination of effective fungal control, balanced with nutrients and micro nutrients, ensuring the healthy growth of the plant and thereby resulting in higher yield and better quality.



Nutrient Content:

N - 1.5 to 2%

P- 1% to 1.5%

K- 0.5 to 1%.

Spore Count 2×10^8 cfu/gm

Dosage:

500 kg/hectare, preferably administered as a basal dose.

Storage:

Store in a cool, dry place away from direct sunlight.

Packaging:

50 kg BOPP bag

25 kg BOPP bag

8 kg plastic bucket

2 kg plastic bucket

2 kg Cardboard box

On request we can blend our range of Biofertilisers into Jaivik and Samrat





Approved Input for organic agriculture
Attested by ECOCERT-India Pvt.Ltd (NPOP)
NAB/002 as per NPOP/EC/NOP regulations

Samrat

Enriched Organic Fertilizer

SAMRAT is a scientifically blended organic fertilizer, enriched with the beneficial nematophagus fungus, *Paecilomyces lilacinus*; and the multi-faceted, nematicidal bacteria, *Pseudomonas fluorescens*.

This combination of nutrients and micronutrients along with *Paecilomyces lilacinus* and *Pseudomonas fluorescens* results in the all-round healthy growth of the plant.

Studies conducted by the Gujarat Agricultural University, Anand, Gujarat, India, have shown that the particular microorganisms present in **SAMRAT** has natural nematode control properties.

Experiments conducted at our R&D farm and Universities across India have shown **SAMRAT** to be very effective against plant parasite nematodes such as:

- Root-knot nematodes
- Cyst nematodes
- Citrus nematodes
- Burrowing nematodes
- Reniform nematodes
- Golden Cyst nematodes



SAMRAT offers an excellent combination of effective nematode control balanced with nutrients and micronutrients, ensuring the healthy growth of the plant and thereby resulting in higher yield with better quality.

Nutrient Content:

N - 1.5 to 2%

P- 1% to 1.5%

K- 0.5 to 1%.

Spore Count 2×10^8 cfu/gm

Dosage:

500 kg/hectare, preferably administered as a basal dose.

Storage:

Store in a cool, dry place under shade.

Packaging:

50 kg BOPP bag

25 kg BOPP bag

8 kg plastic bucket

2 kg plastic bucket





Orgo Turf



Orgo Turf is an excellent product for the eradication of worms from soil. It also provides nutrition to the soil and helps improve soil fertility and health leading to lush green grass.

Worms are highly undesirable on sports turf as they produce worm casts. Worm casts are smelly, small mounds of digested earth. They are unpleasant to look at, slippery, and make balls unpleasant to handle. They can change the fortunes of a game on sports turf.

Worms also help the growth of weeds as they burrow seed material from the surface into the soil.



Orgo Turf can seriously benefit sports turf such as golf courses and amenity turf where worm casts cannot be tolerated. Having an inoffensive odour and being easy to spread it is perfect for discreet application.

In addition, being an organic oilcake, this product will greatly boost the activity of soil micro-organisms leading to an improvement in soil health and productivity.

Orgo Turf also provides excellent protection against plant parasitic nematodes, particularly *Meloidogyne* spp. It imparts resistance from fungal and bacterial diseases of plants.

Nutrient Content:

Nitrogen	2.5%
Phosphorous	0.8%
Potassium	1.9%

Dosage:

125g per sq. yard
 150g per sq. metre
 Spread evenly on turf & irrigate well.



Orgo Neem Garden Kit

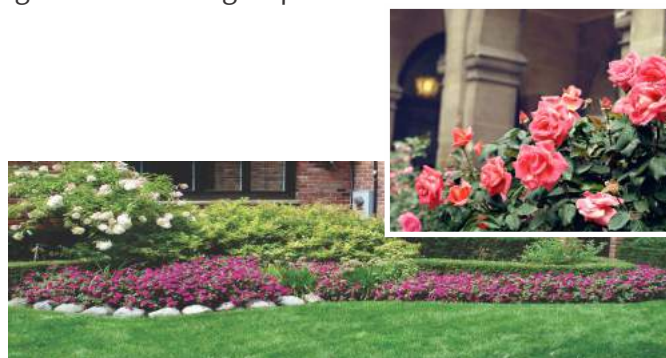
Home Gardening

The world over, home gardeners take pride in their backyards. Keeping in mind that people refrain from using toxic chemicals in their gardens, we manufacture a **ready-to-use Organic Home Garden Kit**. The kit can be tailormade to the requirements of your market.

Our basic ready-to-use kit contains

An organic fertiliser, a biofertiliser, a plant growth promoter & neem oil for pest control.

The kit is engineered for use on an average sized garden containing 50 plants and a small lawn.





Oil Meal Fertilisers

Organic NPKs

Due to our unique geographical presence in one of the richest oil cake regions of the globe, we are able to source a variety of organic raw materials in addition to our own neem cake and others.

These raw materials can be blended into NPK blends to add much-needed organic matter and help boost soil health and productivity.

Oil Meal Fertilisers	N%	P ₂ O ₅ %	K ₂ O%	Organic Matter
Rapeseed	5.0	1.0	1.5	70%
Neem	2.5	1.0	1.5	70%
Castor	4.0	1.9	1.4	60%
Mahua	2.5	0.8	1.9	70%
Karanja	4.0	0.9	1.3	70%
Linseed	4.7	11.7	1.3	-
Mustard	4.5	1.5	1.0	70%
Tobacco Stems Dust	1.10	0.30	0.90	60%
Gypsum	0.50	1.10	-	-
Press Mud	1.20	4.00	2.50	70%
De-Nicotinised tobacco dust	0.50	0.20	0.50	35%
Sal Cake	2.50	0.80	1.90	65%
Bone Powder	0.84	2.86	-	15%
Tobacco Leaf Dust	1.50	0.45	1.20	50%
Rice Bran	2.03	-	-	-
Leather Meal	7.70	0.51	-	70%
Ash	-	10.0	12.5	Variable



N-Guard

Nitrification Inhibitor

N-Guard is marketed exclusively by
Algio Spa in Italy and Romania.

N-GUARD is a unique oleoresin formulation based on a blend of five different natural materials, including biologicals. It 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:

- It helps to increase the fertilizer use efficiency (FUE) of nitrogenous fertilizers.
- 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 the critical stages of growth.
- It helps to reduce the loss of Nitrogen through ammonia volatilization, nitrate leaching and other similar processes.
- It helps plants increase their Nitrogen uptake.
- It helps to control soil borne insect-pests and nematodes.
- It increases crop yield.

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 and also proves to be an environmental hazard because of nitrate leaching.

What happens to Nitrogen post-application?

When Urea is applied to the soil only approximately 33% is actually utilized by the plant. Once applied, Urea hydrolyses rapidly to Ammonium Carbonate. This Ammonical form of Nitrogen is subsequently converted to Nitrite (NO_2) and then to Nitrate (NO_3) by the action of nitrifying bacteria viz. Nitrosomonas and Nitrobacter respectively. The processes of

hydrolysis and nitrification of Urea fertilizer is, to a large extent, completed in about 15-20 days under 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 crops at their early stages of growth - are liable to leach beyond the active root zone.

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 the 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%

- The best **fertilizer (nitrogen) use efficiency** was shown by N-Guard coating @ 8 ml/kg with a Harvest Index of 37.1%.
- N-Guard coating @ 8 ml/kg resulted in the highest B:C ratio of 0.73:1.
- 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 shown some control on the common pests, diseases and nematodes affecting Maize.

SGS trials from ITALY on Wheat and Rice are also available.

Through our partners we can also offer the following **N-GUARD COATED** products:

N-Safe	Granular Urea
N-Take	Granular Urea and Granular Ammonium Sulphate (21% N). (N content can be customised)
Nitro-Guard	Granular Calcium Ammonium Nitrate and MgO (27% N)
Ammo-Guard	Granular Ammonium Sulphate (21% N)
NPK-Guard	Granular NPK complex fertilizers.
Mix-Nsafe	Granular Urea mixed with DAP and MOP
DAP-Guard	DAP

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 a 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.



Bio Orgo

Certified Organic Liquid Plant Growth Stimulant

BIO ORGO represents a formidable advance in harnessing bio-chemical growth stimulants for the benefit of agriculture, floriculture and horticulture. It boosts crop yield by enhancing growth at key stages of development. It is manufactured by controlled fermentation of young and succulent leaves aided by proprietary microorganisms. The finished product is a stable and balanced biological liquid concentrate that is rich in humic acids, amino acids and peptides, natural plant growth promoters (i.e. auxin and cytokinin), organically chelated macro / micro nutrients like Potassium, Phosphorus, Zinc, Iron, and Manganese.

Humic acid stimulates plant enzymes, root growth, nutrient uptake and the growth and proliferation of desirable soil microorganisms in the rhizosphere; which help increase plant growth and yield. Humic acid chelated micronutrients provide ready bio-availability of these vital elements to the growing plant for better yield. Amino acids and peptides provide ready nutrition to microorganisms inducing more of Nitrogen fixation and Phosphorus solubilization. A Potash rich formulation is a good source for improving crop quality. Presence of natural PGR in the formulation available during the early stages of plant growth (before it is able to produce its own supply), also helps to develop healthy crop-stand on the field. All these factors result in a stout plant which resists insect-pests and diseases, early crop maturity, improved crop quality and higher yield.

Fruit and vegetable crops when grown with **BIO ORGO** have shown improved fruit set and retention. For example, tomatoes and watermelons have a higher content of soluble solids. Onions can maintain their quality over a longer period. As for roses (especially the hybrid variety), the plant has profuse bearing with bigger flower size than normal.

BIO ORGO can be mixed with potting compost as a liquid fertilizer



BIO ORGO is a completely natural, non-toxic, and pH neutral product. It is fully water soluble and compatible with most pesticides. It can be used as seedling dip formulation and/or foliar spray for higher productivity of farm crops, fruits and vegetables as well as flowers.

Application Guidelines and Dosage :

For seedling dip:

Mix 25 ml in 1 litre of water. Dip the rootlets for 10 minutes, remove and transplant.

For spray:

Mix 10 ml in 1 litre of water. Spray about 500 Litres of this solution to cover one hectare of land approximately 2 to 3 times during the crop growing season as described below.

1st spray: One month after transplanting.

2nd spray: Two months after transplanting.

3rd spray: At the onset of flowering.

Packaging:

1000 litre tank

200 litre barrel

5 litre carboy

1 litre plastic bottle

500 ml. plastic bottle

Storage:

Store in a cool, dry place away from direct sunlight.



Orgozyme

Granulated Plant Growth Stimulant

A granular product based on a specialized plant extract, rich in amino acids, humic acid and growth promoting substances as well as organically chelated macro and micro nutrients.

Mode of Action :

The growth promoting substances present in **ORGOZYME** are gradually released to the plant resulting in steady growth of the plant.

Its application increases the activity of rhizosphere microbes as the product is rich in amino acids, peptides and micronutrients, especially Fe and Zn.

Rhizosphere microorganisms induce Nitrogen fixation and Phosphorus solubilization.

Humic acid chelated micro nutrients like Fe and Zn are readily available to the plants which results in increased productivity and improved quality of cereals, vegetables, fruits, flowering plants, cotton, sugarcane, tobacco and other crops.

Being rich in potassium, it imparts resistance to plant against abiotic and biotic stresses.

Special Features:

- A ready to use granulated product which can be applied in nurseries as well as field crops.
- It can be applied with most pesticides and chemical fertilizers.
- Safe for crops, the soil and the environment.

Application Guidelines:

In a nursery: Apply @ 125 kg/hectare 10-15 days after germination.

In field crops: Apply @ 20 kg/hectare at 30 and 60 days of crop growth .

Packaging:

25 kg HDPE bags

4 kg HDPE bags

8 kg Plastic Bucket

Storage:

Store in cool, dry place away from direct sunlight.





Nico Plus

Plant growth promoter

A carefully researched biological concentrate, which can be readily diluted with water in a homogeneous, emulsifiable form ready for foliage spray in agriculture and horticulture crops.

NICO PLUS contains fatty alcohol, bio stimulants and other growth factors having higher absorption capacity through foliage. It enhances growth in a natural way that allows plants to make better use of available moisture and plant nutrients. It also increases cell division and enlargement which can lead to better quality products.

It provides the strength to withstand abiotic and biotic stresses like drought and diseases. It also reduces immature flower / fruit dropping.

NICO PLUS increases the photosynthetic rate and the rate of translocation in a crop plant, thus improving its harvest index. It should be applied early in plant ontogeny to get the maximum effect.

NICO PLUS exhibits higher chlorophyll content. It yields higher numbers of transplantable seedlings while maintaining the same degree of seedling greenness.



Dosage: Mix 5 ml per litre of water.

1st Spray: 30-35 days after sowing.

2nd Spray: 55-60 days after sowing or at the onset of flowering.

Typically 400-600 l of spray solution is required per ha.

Packaging:

1000 litre tank

200 litre barrel

5 litre carboy

1 litre plastic bottle

500 ml. plastic bottle

Extra Yield using Nico PLUS

Crop	Kg / Ha
Pulses	
Cow pea	474
Pigeon pea	165
Cereals	
Maize	556
Fruits	
Water melon	6700
Vegetables	
Bottle Gourd	1150
Brinjal/Egg Plant	5100
Chilli	7000
Tomato	13400
	4900
Okra/L.Finger	1090
Cauliflower	3240
Tuber & Bulb Crop	
Potato	4600
	3600
Onion	1000
	600
Cash Crops	
Tobacco	322
	311
Oil Seeds	
Groundnut	412
Spices & Condiments	
Cumin	88
Fennel	86

Treatment	No of Transplantable seedlings per m ²			Chlorophyll Content (Relative O.D.)		
	Tomato	Eggplant	Chilli	Tomato	Eggplant	Chilli
Conventional Farmer Practice	188	187	151	0.26	0.32	0.17
Conventional FP + Two Sprays of Nico Plus	207	208	173	0.285	0.34	0.19





Nico Neem

Botanical Pesticide

(300ppm, 1500ppm, 3000ppm, 10000ppm)

Chemical Composition:

NICO NEEM is an oil-based, emulsifiable concentrate formulation consisting of neem oil obtained from *Azadirachta indica* seeds, and Karanj oil obtained from *Pongamia glabra* seeds and surfactant/emulsifier. The insecticidal action is due to the presence of several neem limonoids of which Azadirachtin is the most important. Azadirachtin concentration is maintained at a level of ~300, 1500, 3000, and 10,000 ppm in the formulation.

Mode of Action:

A very wide spectrum of phytophagous insect-pests is affected by this Neem formulation. It controls the pest population through a triple action activity - acting as a feeding deterrent, oviposition inhibitor and insect growth regulator. The neem based bio-chemicals act as contact and in a systemic manner. Bio-chemicals from Karanj oil, pongamol and karanjin, generally act synergistically.

Salient Features:

- **NICO NEEM** is non-toxic to beneficial and non-target organisms.
- It is generally compatible with chemical pesticides (unless highly acidic or highly alkaline) so as to provide complementary activity in integrated pest management (IPM) programmes.
- It leaves no residue in the soil, crop or the environment and is highly bio degradable.
- An excellent alternative to hazardous chemical fungicides.
- It is extracted using the Cold Press Extraction process and therefore, retains nutrients and active ingredients.
- Effective pesticide, nematicide, insecticide, as well as miticide. Excellent for crops as well as for veterinary use.
- It is truly an environment friendly product.



Through the use of Nico Neem you can prevent the development of resistance in pests.

Effectiveness:

Neem is effective against more than 200 species of insect-pests, some of whom are resistant to chemical pesticides or are otherwise difficult to control.

It acts as a feeding deterrent, oviposition inhibitor and insect growth regulator and therefore, though it may not kill instantaneously, the eventual results are very effective.

Nico Neem may lead to insect repellence/avoidance rather than the conventional contact knock-down. Hence the number of dead insects is not necessarily a good indicator of product efficacy. Assess results 6-12 days after application. Consider: loss of leaf mass, yield, populations of beneficials, leaf damage & pest populations.

NICO NEEM is effective against sucking insects such as Aphids, Leaf Hoppers, Mealy Bugs, Mites, the White Fly and Thrips as well as chewing insects such as Stem Borer, Fruit Borer, Capsule Borer, Caterpillars, etc.

NICO NEEM increases the population of Beneficial insects (Bio Agents):

Experiments were conducted at the Gujarat Agricultural University, Anand – India.

One such experiment was conducted at the Bio-Control Project of Gujarat Agricultural University, Anand, India during 1994 to study the effect of Nico Neem in conserving beneficial insects (Bio-agents).



The results are as follows:

Population per 25 plants

Bio agents	IPM with NICO NEEM	Insecticide	Control
Ladybird beetle	280	142	221
Chrysopa	270	92	129
Geocoris	60	21	39
Spider	92	42	66
Stephylimid	38	18	36
Schimnus	40	12	34
Anthocorid	56	31	47

There are rich communities of beneficial insects, spiders and diseases that attack insect-pests. The beneficial species often control insect-pests, especially in places where the use of broad spectrum pesticides is to be avoided. Without these beneficial species, the insect-pests would multiply so quickly that they would completely ravage the crop.

Pests have high reproductive capacities to offset the naturally high mortality rate they face in nature. For example, a brown plant hopper female produces many offspring, but because of the action of predators, parasites and diseases, only about 1 or 2 survive after one generation. It is not unusual for the mortality rate to reach 98-99%.

Natural enemies also have their own enemies. Parasites and predators, each has predators, parasites and pathogens. Most predators are cannibalistic - a behaviour which ensures that in the absence of prey, some will survive.

The natural balance between insect-pests and their natural enemies is often disrupted by indiscriminate use of chemical insecticides. Although insecticides are needed in some cases, they must be used judiciously in order to save these vulnerable natural control agents.

Usage:

NICO NEEM gives best results when used as a preventive. Monitor the field continuously for pest attack. When the pest population is low or the damage system just begins to appear, apply a spray of **NICO NEEM**. The spray is generally effective for fifteen days.

Application Guidelines:

The emulsifiable concentrate can easily be diluted with water to make a colloidal suspension which should be sprayed on the crop.

Being oil based, it is recommended that **NICO NEEM** be diluted with water in a separate container before filling into a spray pump.

In order to avoid clogging of spray pumps, do not leave any left over mixture in it. Mix a fresh batch for each application.

In case of rain after spraying of **NICO NEEM**, re-apply the dose.

As **NICO NEEM** is photodegradable, it is advisable to spray the mixture during evening hours.

For 100% organic **NICO NEEM** the natural emulsifier is sold separately and can be mixed with water along with **NICO NEEM**.

Dosage:

- 300 ppm - 5ml to 7ml / litre of water
- 1500 ppm - 4ml to 5ml / litre of water
- 3000 ppm - 3ml to 4ml / litre of water
- 10000 ppm - 2ml to 3ml / litre of water

Depending upon canopy development, 400-600 litres of this colloidal suspension can be sprayed on the crop of one hectare area.

Application guidelines: (using organic emulsifier)

70g/litre of NICO NEEM

First mix the emulsifier with **NICO NEEM**, and then dilute it with water according to the dosage given above.

Packaging:

1000 litre tank, 200 litre barrel, 5 litre carboy, 1 litre plastic bottle, 500 ml. plastic bottle

Storage:

Store in a cool, dry place away from direct sunlight.

Shelf Life: 2 years





NICO NEEM for vector control:

Vector borne infections (VBI) are common around the globe and they account for many devastating diseases like malaria, filariasis, dengue & chikungunya.

Studies have shown **NICO NEEM** to be highly effective in vector control.

A spray of **NICO NEEM** in mosquito infested areas can greatly reduce their population.

NICO NEEM treated bed nets (ITN):

An insecticide treated net is a mosquito net that repels, disables or kills mosquitoes coming into contact with it.

There are two types of treated nets:

1. Conventional Insecticide treated net (ITN)
2. Long lasting insecticidal nets (LLIN)

How is ITN different from LLIN?

LLIN is a factory treated net made with netting material that has insecticide incorporated within or bound around the fibers. Whereas a conventional ITN is a mosquito net that the user himself can treat by dipping in a WHO recommended insecticide.

To make a natural insecticide treated bed net, make a mixture of **NICO NEEM** and water @ 50ml/litre of water and dip the bed net into this mixture. To ensure its continued insecticidal effect the net should be re-treated after 3 washes or at least twice a year.

NICO NEEM for locust control:

NICO NEEM prevents locusts from developing into their migratory swarms which are destructive to vegetation. Although alive, they become solitary, lethargic, almost motionless and thus extremely susceptible to predators such as birds.

Grasshopper nymphs are affected by **NICO NEEM** in a similar way.

Safe for Honey Bees



Beneficial for Ladybird beetles





A list of a few crops and pests on which Nico Neem is effective

ID	Crops	Pests
1	Cabbage & Cauliflower	Aphids, Whiteflies, Diamond back moth, Spodoptera
2	Tomato	Leaf miners, Fruit borer, White fly, Aphids, Nematodes
3	Egg plant	Whiteflies Red spider mites, Shoot and Fruit borer, Nematodes
4	Okra	Aphids, Jassids , Whiteflies, Borer, Red spider mites, Fruit borer, Nematodes
5	Cotton	Whiteflies, Aphids, Leafhoppers, American bollworm, Spodoptera litura , Red spider mites, Spotted bollworm, Thrips, Pink bollworms, Cotton stainers, Helicoverpa armigera, Heliothis
6	Rice	Leaf folder, Army worms, Ear head bug, Stem borer, Rice hispa, Brown plant hopper, Gall midge, Thrips, Nematodes
7	Gherkin	Leafminers
8	Marigold	Leafminers
9	Floriculture	Whiteflies, Red spider mites
10	Sugarcane	Early shoot borer, Internode borer, Whiteflies, Stem borer, Top Borer, White grubs, Leaf hoppers, Scales, Mealy bugs, Nematodes
11	Coconut, Areca nut, Oil Palm, Date Palm	Eriophyid mite, Black headed caterpillar, Red palm weevil, Mealybugs, Rhinoceros beetle, White grubs, Scales, Inflorescence caterpillars
12	Cucumber	Spot mites, Nematodes
13	French Beans	Mites, Nematodes
14	Lab-Lab	Black aphids, Nematodes
15	Chickpea	Pod borers, Nematodes
16	Pigeon Pea	Pigeon pea, Cyst nematode, Pod borer
17	Oil Seed Crops (Groundnut, Sunflower, Gingely)	Leaf miner, Red pod flies, Thrips, Helicoverapa, Hairy caterpillar, Prodenia, Aphids, Stem borers, Nematodes
18	Sesamom	Castor semi looper, Til leaf webber
19	Millets (Sorghum, Ragi, Maize)	Shoot fly, Stem borer, Ear head bug, Midge, Pink borer, Cut worms, Flea beetles
20	Wheat	Red flour beetle
21	Cashew	Stem borer, Root borers, Tea mosquito bug
22	Tea	Thrips, Purple mites, Looper caterpillar, Pink mites, Flush worms, Tea mosquito bugs, Red spider mites
23	Coffee	Scale insects, Coffee stem borer, Berry borer, Mealy bugs
24	Albizia Lebbeck (Forest Tree)	Jumping lice, Aphids, Mealy bugs, Thrips
25	Crotons	Mealy bugs
26	Red Rose	Red scale insect
27	Vegetables	Shoot and fruit borer, Stem borer, Leaf miners, Fruit flies, Semiloopers, Spotted beetles, DBM, Leaf webbers, Scales, Mites, Nematodes
28	Spices (Cardamom, Ginger, Pepper, Chillies, Turmeric, Onion, etc.)	Thrips, Spodoptera spp. Helicoverapa spp, Rhizome borers, Poilu beetle, Shoot borers, Mites
29	Fruit Crops(Mango, Guava, Grapes, Sapota, Pomegranate, Pineapple, Banana, Cashew, etc.)	Hoppers, Stem borers, Fruit borers, Fruit flies, Leaf miners, Flea beetles, Fruit sucking Moths, Leaf webbers, Tea mosquito, Mealy bugs, Thrips
30	Tobacco	Tobacco caterpillar, Nematodes



Mode Of Action

Insect	Effects
Mediterranean fruit fly	Disrupts growth, toxic
Oriental fruit fly	Arrests pupae development, retards growth, toxic to larvae
Face fly	Retards growth, toxic
Horn fly, Whitefly	Repels, retards growth, inhibits feeding
Housefly	Inhibits feeding, disrupts molting, repels
Sorghum shoot fly	Inhibits feeding
Yellow-fever mosquito	Kills larvae, disrupts molting
House mosquito	Toxic to larvae
Flea	Retards growth, repels, inhibits feeding, disrupts growth, eggs fail to hatch
Head lice	Kills, very sensitive to neem, traditional use in Asia
Spotted cucumber beetle	Retards growth, inhibits feeding
Mexican bean beetle	Retards growth, inhibits feeding, disrupts molting
Colorado Potato beetle	Eggs fail to hatch, larvae fail to molt with aza as low as 3ppm, inhibits feeding
Khapra beetle	Inhibits feeding, disrupts molting, toxic to larvae
Confused flour beetle	Inhibits feeding, disrupts molting, toxic to larvae
Japanese beetle	Repels, retards growth, inhibits feeding, disrupts growth
Red flour beetle, Flea beetle	Inhibits feeding, toxic
American cockroach	Reduces fecundity and molts, reduces number of fertile eggs
Bean aphid	Reduces fecundity, disrupts molting
Rice gall midge	Toxic
Western thrips, Diamondback moth	Retards growth, strongly suppresses larvae & pupae, inhibits feeding
Webbing clothes moth	Inhibits feeding, disrupts molting
Gypsy moth	Retards growth, inhibits feeding, disrupts growth
Corn earworm	Retards growth, inhibits feeding, disrupts molting
Pink bollworm	Retards growth, inhibits feeding
Fall armyworm	Retards growth, repels adults, inhibits feeding, disrupts molting, toxic to larvae
Tobacco budworm & Cabbage looper	Inhibits feeding
Tobacco hornworm	Inhibits feeding, disrupts growth, toxic
Leafminer	Retards growth, inhibits feeding, disrupts molting ,toxic
Sepentine leafminer	High pupal mortality, retards growth, inhibits feeding, disrupts molting, toxic to larvae
Brown planthopper	Inhibits feeding, repels, disrupts growth, mating failures effect & sterility
Green leafhopper	Inhibits feeding
Migratory locust	Stops feeding, converts gregarious nymph into solitary forms, reduces fitness, adults cannot fly
House cricket	Disrupts molting
Large milkweed bug	Toxic, disrupts growth
Mealy bugs	Repels, inhibits feeding
Milkweed bug	Difficulty in escaping the “skin” of the last molt, disrupts molting
Fire ant	Inhibits feeding, disrupts growth
Boll weevil	Inhibits feeding
Cowpea weevil	Inhibits feeding, toxic
Rice weevil	Inhibits feeding, disrupts growth, toxic



Nicotine Sulphate 40%

Botanical Pesticide

NICOTINE SULPHATE is an insecticide of plant origin. It is very effective against a wide range of insect-pests affecting crops of economic importance as well as on ectoparasites affecting livestock.

Chemical Composition:

NICOTINE SULPHATE 40% contains

Nicotine Alkaloid 400gm/1000gm i.e. 40% (w/w)
Vegetable Oils, Tar, etc. 20gm /1000gm i.e. 2% (w/w)
Water and other ingredients 580gm/1000 gm i.e. 58% (w/w).

Mode of Action:

NICOTINE SULPHATE acts upon the central nervous system of the insects. It has both contact as well as fumigation action.

Uses:

NICOTINE SULPHATE 40% is used to kill aphids, bugs, worms, leafhoppers and similar sucking insects which attack and destroy fruit, vegetables, crops and even flowers. It is also effective against Lice, Mites and Ticks which are a menace to livestock.

Chemical Formula: $(C_{10}H_{14}N_2)_2H_2SO_4$

Advantages:

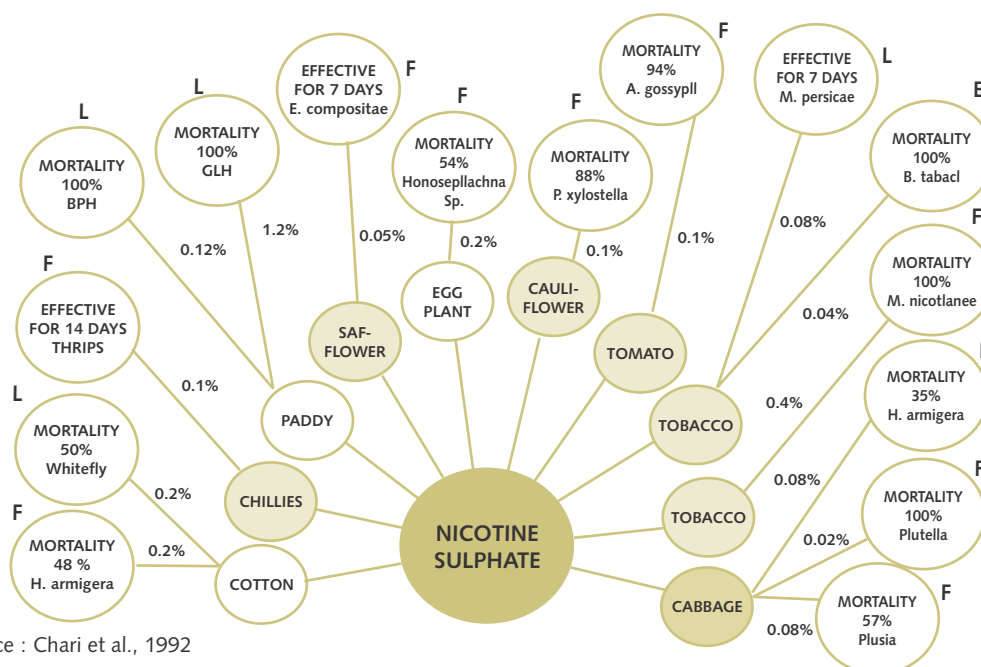
While synthetic pesticides leave toxic remnants on fruits and vegetables, **Nicotine Sulphate** being highly bio-degradable does not leave any objectionable residue on market produce. Hence, it is an extremely safe pesticide.

NICOTINE SULPHATE being an insecticide of plant origin does not pollute the environment like other chemical insecticides.

No immunity has ever been developed by any pest against this product during its hundred years of continuous use all over the world.



BIO-EFFICACY OF NICOTINE SULPHATE



Source : Chari et al., 1992



Nico Dust

Botanical Pesticide

NICO DUST is a nicotine based pesticide formulated in a unique way. It possesses all the positive qualities of Nicotine Sulphate, eliminating its shortcomings i.e. high volatility, causing handling difficulty and low persistency requiring frequent application.

Nicotine Alkaloid is trapped *in situ* in free fatty acids contained in a natural product. The resultant fatty acid salt of nicotine has a higher degree of persistence as compared to Nicotine Sulphate, yet leaving no residue on crop.

Application Guidelines:

- **NICO DUST** can be directly applied on soil furrows to control many soil borne pests.
- It can be “swing-fogged” on crop plants to control insect damage, particularly from soft bodied insects.
- Low percentage of the active ingredient on a very fine dry inert carrier helps to make a ready to use product.
- Its effectiveness increases, if dusting of the crop plant is done soon after sprinkler irrigation.



FUMEX

Neem/Nicotine Fumigator

FUMEX is a broad spectrum pesticide of botanical origin. It is excellent for use in greenhouses for the control of thrips, aphids, white flies, mealybugs and spidermites and all other kinds of crawling and gnawing insects.

This product combines the power of smoke fumigation with one of the most effective contact insecticides available.

When the can is ignited a large quantity of smoke is released and the active ingredients within the can vaporize, thus filling the greenhouse with their fumes.

Since the greenhouse is completely filled with the fumes there is no room for the insects within the greenhouse to hide. They come into contact with the vaporized active ingredient and succumb to it.

A lot of time, money and effort can be saved by using this product and it leaves no residue.

Dosage: 1 Can of 440 g treats 25000 cu. ft.

Also Available: Neem based Herbal Fumigator.



Neem-F

Botanical Fungicide

NEEM-F is an oil based formulation for control and prevention of fungal diseases such as sheath blight, anthracnose, black spot, powdery mildew and rust. Neem-F prevents fungal spores from penetrating plant tissue and slows the advance of fungal diseases.

Mode Of Action:

It has both antispore and a fungistatic action.

The mycelial growth is arrested and sclerotial germination of causal organism is prevented. This results in reduced fungal growth and development, thus making the product effective for curative action.

Active Ingredients:

Azadirachtin, Salannin and Nimbin.

Special features:

- Does not leave any residue in the soil, crop or the environment (highly bio-degradable).
- Reduces chances of cross-resistance by pathogens thus rendering it suitable for IPM programmes.
- Has a waiting period of 0 days for crop harvest after its spraying.
- Is an economical product for disease management.
- Can be used both as a preventive and a curative fungicide.
- Is safe for crops, the soil and the environment.
- Is a truly environment friendly product.



Application Guidelines:

The emulsifiable concentrate can easily be diluted with water to make a colloidal suspension which should be sprayed on the crop.

Being oil based it is recommended that **NEEM-F** be diluted with water in a separate container before filling into a spray pump.

In order to avoid clogging of spray pumps, do not leave any left over mixture in it. Mix a fresh batch for each application.

In case of rain after spraying of **NEEM-F**, re-apply the dose.

As **NEEM-F** is photodegradable it is advisable to spray the mixture during evening hours.

For 100% organic **NEEM-F** the natural emulsifier is sold separately and can be mixed with water along with **NEEM-F**.

Packaging:

1000 litre tank
200 litre barrel
5 litre carboy
1 litre plastic bottle
500 ml. plastic bottle

Storage:

Store in a cool, dry place away from direct sunlight.

Shelf Life:

2 years

Dosage for natural emulsifier to be added for 100% organic NEEM-F:

70g/litre of **NEEM-F**

First mix the emulsifier with **NEEM-F**, and then dilute it with water according to the dosage given above.

Strength:

300 ppm

Dosage:

Mix 5ml/1 litre of water.





Neemate-10G

Natural Nematicide

A novel granular pesticide of botanical origin, used for the control of soil borne pests including nematodes. It is recommended for soil application. The active ingredients include a careful blend of neem seed constituents collectively called neem bitters. They are coated or absorbed on to a selective carrier material of agricultural origin, so that the persistency and stability of the active compound is enhanced in this medium. The mode of action is both systemic and contact type.

Advantages:

- Can be used as a substitute for Methyl Bromide for nematode management.
- Can be used as a component in Integrated Pest Management (IPM).
- Ready to use. (No mixing required!)
- Safer to handle as particles settle quickly and there is no spraying.
- Requires simple application equipment, such as seeders or fertilizer spreaders.
- More persistent than wettable powders (WPs) or emulsifiable concentrates (ECs).

Nutrient Content

Organic Matter	80% - 85%
Nitrogen	2% - 2.75%
Phosphorus	2% - 2.75%
Potassium	1% - 1.5%

Active Ingredients:

Azadirachtin and other Neem based triterpenoids.

Effectiveness:

Widely recommended to control white grubs, nematodes and other soil borne pathogens.

NEEMATE-10G is a neem based nematicide which can be used to control root-knot nematodes affecting fruit crops, vegetable crops or field crops. The chemical pesticide Carbofuran is widely used to control nematodes. However, Carbofuran has a very short effective period, moreover it is banned in many countries because of its adverse effect on the environment and its inherent toxicity.

A botanical pesticide, **NEEMATE-10G** is free from the toxicity of Carbofuran.

Comparative bio-efficacy of **NEEMATE-10G** and Carbofuran for control of root-knot nematode in chick pea (3 years mean).

Table : 1

Treatment	Root-Knot Index (RKI 0-5)*	Yield (Kg/ha.)
NEEMATE-10G (10 kg/ha)	2.25	3237
Carbofuran-3G (1kg a.i/ha)	2.61	2977
Control	3.28	2774

*1 = Free; 5 = Maximum disease intensity.



Application Guidelines:

It is essential to apply **NEEMATE-10G** before pests attack the crop. This prophylactic action results in built-in protection of crop for an abundant harvest.

Methodology/Dosage:

Apply @25 kg/ha for nursery pest management.
Apply 1-2 days before sowing as a prophylactic dose.
Apply to the soil @25 kg/ha field crop.
Apply before transplanting as a prophylactic dose.

Packaging:

25 kg HDPE/LDPE bag
4 kg bag

Storage:

Store in a cool, dry place away from direct sunlight.





Neem-based Liquid Nematicide

Margofix

Plant parasitic nematodes – small microscopic roundworms - are one of the major stresses affecting crop production worldwide. Crop problems induced by these nematodes generally occur as a result of root dysfunction, low rooting volume leading to reduced water and nutrient uptake resulting in poor utilisation efficiency.

Though chemical control appears to give better control of nematodes, the development of resistance in most of the nematode species towards the chemical

nematicides is evident. Synthetic nematicides, when used indiscriminately, also destroy beneficial soil fauna including entomopathogenic nematodes (EPN). Hence, a safe means for nematode control is sought after in alternatively managed farm systems.

Margofix provides just such an answer. Made from a highly concentrated extracted of Neem, margofix is created from totally botanical sources. It leaves no residue in the crop, soil or in the environment. Margofix is the perfect product for fast-action nematode control.



Dosage :

Margofix should be sprayed onto any pellets/ granules of agricultural origin @ 1 litre per 10kgs and applied to the soil @ 25kg/Ha.

Alternately, Margofix can be directly applied to the soil @ 2.5l/Ha.

1st Application: Basal Dose

2nd Application: 45 days after planting

Karanj Oil

Numerous studies have shown Karanj oil to prevent many pests from feeding and laying eggs and to kill pests such as mites, aphids and leafminer larvae. It shows excellent efficacy as a stored grain protectant and is known to act synergistically with Neem. Karanj oil may also be used as a base for blending other botanicals to provide a broad spectrum of pesticidal activity. The active ingredient, karanjin, is known for its outstanding anti-fungal activity. Karanj oil also contains several fatty acids which help increase soil quality.

Karanj oil has shown strong control of Aphids in several university trials.

The oil has a high content of triglycerides, and its disagreeable taste and odor are due to bitter flavonoid constituents, pongamin and karanjin, which stimulate plant immune function. It lasts longer on plants than other botanical insecticides. Furthermore, Karanj remains a liquid upto 4°C, making it easy to mix.



Importantly, Karanj is not recognised as an Annex 1 product in the EU, and is free to import and sell.

Karanj Cake is an excellent organic fertiliser, being a rich source of organic matter and helping alleviate soil health and boost productivity.

Can be used as a ingredient in 'organic' NPK blends: When mixed with NPK fertiliser complexes, Karanj acts as an excellent source of organic matter, helping increase plant nutrient uptake and improve soil characteristics. Karanj also has proven nematicidal properties.



PowerAll

Pseudomonas fluorescens 1% w.p.

Pseudomonas fluorescens (2×10^8 cfu/g min.) is a rhizosphere bacteria which protects plant roots against parasitic fungi such as *Fusarium* or *Pythium* as well as certain phytophagous nematodes such as *Meloidogyne* sps.

Fungi such as *Alternaria* *cajani* and *Curvularia* *lunata* grow on plant surfaces causing disease and death of plants. Plant treatment with *Pseudomonas fluorescens* can limit these fungi from growing and prospering.

It is non-specific in its ability to protect plants and, once established, it works against several different pathogens while inducing systemic resistance in the host plant.

Production of secondary metabolites plays an important role in plant disease suppression and PF produces substances like 2,4-diacetylphloroglucinol, which is responsible for the anti-phytopathogenic and the biocontrol properties of PF.

PF aggressively colonises the roots of the crop and suppresses disease by inhibiting phytopathogens in the soil or on the roots by competition and/or antagonism.

It has shown potential benefits in bio-remediation against several strains of plant pathogens.



Dosage: 5 kg per ha. preferably mixed with 2 tons of any organic matter such as ORGO blended organic fertiliser/FYM.

Nursery bed treatment: 50 gm/sq. m.

Seed treatment: Treat the seed @ 10gm/kg seed.

T-Harz

Trichoderma harzianum 1% w.p.

Trichoderma harzianum (2×10^8 cfu/g min.) is an antagonistic fungus that is capable of hyperparasitizing pathogenic fungi. Its importance as a biocontrol agent is because it is able to attack a large variety of phytopathogenic fungi responsible for major crop diseases, such as: *Botrytis*, *Fusarium* and *Penicillium* sp., *R. solani*, *S. rolfsii* and *Phythium* *aphanidermatum*.

T-harz produces various metabolites such as several lytic enzymes, including a β -1,3-glucanase, and antibiotics which control disease causing microbes. In addition it stimulates plant defense mechanisms.

T-harz increases the rate of plant growth and development by developing more roots which help the crops to become more resistant to drought.

T-harz has an additional benefit of being able to solubilise phosphates and micronutrients.

Dosage:

4 kg per ha. preferably mixed with 2 tons of any organic matter such as ORGO blended organic fertiliser/FYM.



Common Application Guidelines:

Apply near the root zone, preferably leaving a 7 day gap on either side before applying chemical fertiliser or pesticide.

Packaging:

500gm LDPE bag
1 kg LDPE bag





Nicoderma

Trichoderma viride 1% w.p.

Trichoderma viride (2×10^8 cfu/gm. Minimum) Talc based formulation.

Trichoderma viride is an antagonistic fungal organism present in the soil and is highly effective for the control of seed and soil borne diseases of a majority of economically important crops, especially pulses and oil seeds.

This bio control agent when applied along with seed, colonizes the seed and multiplies on its surface. It kills not only the pathogens present on the surface of the seed but also gives protection against soil borne pathogens through the life of the crop by action of mycoparasitism and antibiosis.

Seed treatment with Trichoderma viride has registered higher germination in a number of studies and was at par with "Captan".

It is effective for control of soil borne diseases caused by Rhizoctonia solani, Macrophomina phaseolina and Fusarium spp; and is a very important weapon against diseases such as root rot, seedling diseases, charcoal rot, wilt, damping-off, collar rot, etc.

The potential of Trichoderma viride in managing soil borne pathogens has been demonstrated in many crop diseases like seedling disease of cotton (Ramakrishna and Jeyarajan, 1986; Aagarsamy et al., 1987a and b)

root rot of soyabean (Jharia and Khare-1986), root rot of Cowpea (Alagarasami Shivaprakasam. 1988), charcoal rot of sorghum (Sekhar and Analosur, 1986) and root rot of mung bean caused by Macrophomina phaseolina (Samiyyapan et. al, 1987).

NICODERMA may also serve plants as a biofertilizer due to its Phosphorus solubilizing activity and its ability to decompose organic matter into growth promotary humic matter, resulting in increased availability of micro nutrients to plants.

Dosage:

5 kg per ha. preferably mixed with 2 tons of any organic matter such as ORGO blended organic fertiliser/FYM.

Nursery bed treatment: 50 g/sq. m².

Seed treatment: 10g/kg seed.

Packaging: 500g LDPE bag
1 kg LDPE bag

Application Guidelines:

Apply near the root zone, preferably leaving a 7 day gap on either side before applying chemical fertiliser or pesticide.



With NICODERMA



Without NICODERMA



With NICODERMA



Without NICODERMA



Management of plant pathogens/diseases by biocontrol agent *Nicoderma*

Cereals

Crop	Disease	Pathogens	Mode of application
Rice	Banded Blight	<i>R. solani</i>	Seed, Soil, Seedling treatment
Rice	Bunt	<i>Neovossia indica</i>	Seed treatment
Rice	Brown spot	<i>Drechslera oryzae</i>	Seed treatment
Rice	Sheath Blight	<i>R. solani</i>	Soil treatment, seed treatment and foliar spray
Sorghum	Seed pathogens	<i>A. flavus</i> , <i>A. niger</i> , <i>Alternaria alternata</i>	Seed treatment
Wheat	Karnal bunt	<i>Neovossia indica</i>	Seed treatment
Wheat	Loose smut	<i>Ustilago segatum tritici</i>	Seed treatment

Pulses

Crop	Disease	Pathogens	Mode of application
Chickpea	Wilt, Seed rot, Root rot, Collar rot	<i>F. oxysporum</i> f. sp. <i>ciceris</i> , <i>S. rolfsii</i> , <i>R. solani</i> , <i>R. bataticola</i> , <i>M. phaseolina</i>	Seed & Soil treatment
Cowpea	Root rot, wilt	<i>M. phaseolina</i> <i>Fusarium oxysporum</i> f. sp. <i>tracheiphilum</i>	Seed & Soil treatment
Mung bean	Root rot	<i>M. phaseolina</i>	Seed & Soil treatment
Pea	White rot	<i>Sclerotinia sclerotiorum</i>	Soil treatment
Pigeonpea	Wilt	<i>F. udum</i>	Seed & seedling treatment
Soybean	Root rot	<i>M. phaseolina</i>	Soil treatment

Commercial crops

Crop	Disease	Pathogens	Mode of application
Cotton	Seedling disease	<i>R. solani</i>	Seed treatment
Sugarcane	Root rot	<i>Pythium graminicola</i>	Soil treatment
Sugarcane	Red rot	<i>Colletotrichum falcatum</i>	Soil treatment and spray
Sugarcane	Wilt	<i>F. moniliformae</i>	Seed treatment

Sesamum

Crop	Disease	Pathogens	Mode of application
Groundnut	Collar rot, Root/Crown rot	<i>A. flavus</i> , <i>S. rolfsii</i> , <i>A. niger</i>	Seed treatment Soil treatment
Mustard	Damping off	<i>Pythium aphanidermatum</i>	Seed & Soil treatment
Safflower	Root rot	<i>M. phaseolina</i>	Soil treatment
Sesamum	Root rot	<i>M. phaseolina</i>	Seed & Soil treatment
Soybean	Root rot	<i>M. phaseolina</i>	Soil treatment
Sunflower	Root/collar rot	<i>Sclerotium rolfsii</i> , <i>R. solani</i> , <i>S. sclerotiorum</i>	Seed treatment

Plant pathogens/diseases

Crop	Disease	Pathogens	Mode of application
Cabbage	Damping off	<i>Rhizoctonia solani</i>	Seed treatment
Egg plant	Wilt, damping off	<i>F. solani</i> , <i>Pythium aphanidermatum</i>	Seed & Soil treatment
Egg plant	Collar rot	<i>Sclerotinia sclerotiorum</i>	Soil treatment
Melon	Collar rot	<i>R. bataticola</i>	Seed treatment
Mung bean	Root rot	<i>M. phaseolina</i>	Seed & Soil treatment
Potato	Black-scurf	<i>R. solani</i>	Tuber treatment
Tomato	Damping off	<i>Pythium indicum</i>	Seed & soil treatment

Plant pathogens/diseases

Crop	Disease	Pathogens	Mode of application
Apple	White root rot	<i>Dematophora necatrix</i>	Soil treatment
Banana	Panama disease	<i>Fusarium oxysporum</i> f. sp. <i>cubense</i>	Sucker dipping with T.v(10^6 cfu/ml) + wheat bran
Citrus (Mandarin)	Root rot	<i>Phytophthora nicotianae</i> pv. <i>parasitica</i> , <i>P. colocasiae</i>	Soil treatment
Mango	Fruit rot	<i>Lasiodiplodia theobromae</i> , <i>Rhizopus arrhinus</i>	Fruit treatment
Passion fruit	Collar rot	<i>R. solani</i>	Seed treatment



Bioniconema

Paecilomyces lilacinus 1% w.p.

Paecilomyces lilacinus (2×10^8 cfu/gm. minimum)
(Mother culture: Indian Institute of Horticultural Research, Bangalore) Talc based Formulation.

Paecilomyces lilacinus has been one of the principal genera of importance in bio-control studies in recent years. Paecilomyces lilacinus, a bio-control fungus, protects the root system against diseases caused by plant parasitic nematodes, specifically root-knot nematodes (*Meloidogyne* spp.), reniform nematodes (*Rotylenchulus reniformis*), burrowing nematodes (*Radopholus similis*) and citrus nematodes (*Tylenchulus semipenetrans*).

These nematodes infect agricultural and horticultural crops of economic importance. This bio-agent colonizes the root surface and is an antagonistic fungus, strongly parasitic to eggs and egg-masses of plant parasitic nematodes. **BIONICONEMA** can destroy upto 90% of eggs and 75%-80% of egg-masses of nematodes.

Therefore, after one or two applications, you observe a plummeting fall in the nematode population. This is because few eggs survive to hatch new generations.

It is particularly effective against the following nematodes:

Root-knot nematode	<i>Meloidogyne</i> spp.
Golden cyst nematode	<i>Globodera pallida</i> & <i>G. rostochiensis</i>
Cyst nematode	<i>Heterodera</i> spp.
Citrus nematode	<i>Tylenchulus semipenetrans</i>
Burrowing nematode	<i>Radopholus similis</i>
Reniform nematode	<i>Rotylenchulus reniformis</i>

Dosage:

5 kg per ha. preferably mixed with 2 tons of any organic matter such as ORGO blended organic fertiliser/FYM.

Nursery bed treatment: 50 g/sq. m².

Seed treatment: 10g/kg seed.

Packaging:

500gm LDPE bag
1 kg LDPE bag

Application Guidelines:

Apply near the root zone, preferably leaving a 7 day gap on either side before applying chemical fertiliser or pesticide.



Severe Nematode infestation, Soybean

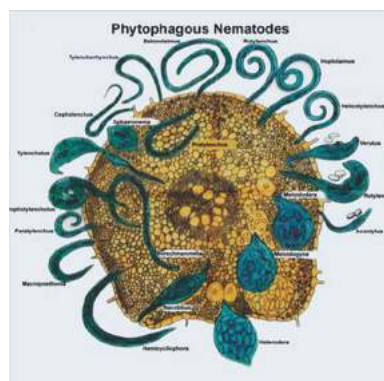
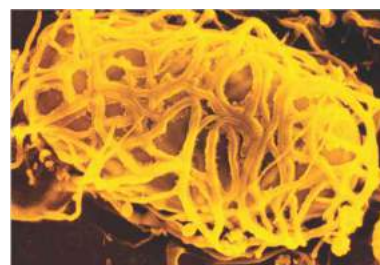
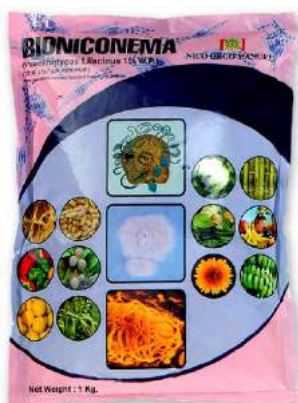


Diagram of Nematodes (microscopic)



Paecilomyces lilacinus colonized root knot nematode egg (electron microscope photo)



Nematode infected root



Nematicide Experiments

Effect of Neemate-10G and Samrat on the root-knot development of *M. incognita* & on the growth parameters in chickpea plant.

The experiments below conducted at A.M. University, Aligarh.

Treatment	Plant length (cm)			Plant fresh weight (g)			Plant dry weight (g)			Pods No.	Nodules No.	Chlorophyll content (mg/g fresh leaves)
	Shoot	Root	Total	Shoot	Root	Total	Shoot	Root	Total			
Control	27.6	8.3	35.9	13.7	7.0	20.7	3.4	0.8	4.2	21	3	2.402
M.incognita	23.5	5.0	28.5	11.0	5.5	16.5	2.9	0.5	3.4	13	2	2.120
Neemate 10G	32.9	11.9	44.8	17.4	8.7	26.1	3.9	1.4	5.3	25	4	2.473
Samrat	34.7	12.6	47.3	19.0	9.5	28.5	4.1	1.7	5.8	30	5	3.000

Treatment	Nematode population		No. of galls/root system	No. of eggs/eggmass	No. of eggmasses/root system
	Soil	Root			
M. incognita	15080	214	112	98	83
Neemate-10G	11980	186	87	75	60
Samrat	11600	172	82	75	60

Effect of SAMRAT on the devt. of root knot nematode in Pumpkin:

Treatment	No. of galls/plant
Samrat @ 15g/plant	143.00
Samrat @ 30g/plant	115.33
Control	190.66

The experiments above conducted at H.P. Agricultural University.

Effect of SAMRAT on the devt. of root knot nematode and yield in Tomato:

Treatment	Pf / 200 cc soil	RKI	Yield (q/ha)	ICBR
Samrat @ 30g/plant	583.33	5	108.2	2.35
Samrat @ 45g/plant	510.00	5	112.6	2.42
Carbofuran @ 5g/plant	386.67	5	110.1	1.52
Control	1246.67	5	100.1	-

*SAMRAT is our organic fertiliser enriched with Bioniconema (paecilomyces lilacinus)

Evaluation of bio-nematicides Neemate 10G and Samrat for management of root-knot management of root-knot nematode, *M. incognita* race-II in pomegranate (2010-11)

The experiments below conducted at central nursery farm, chief seeds officer, M.P.K.V., Rahuri.

Treatment	Mean RKN popn. /200 cm ³ of soil			Decline in RKN population (%)*		Mean root galls/ 5 g roots			Decline in RKN population (%)*		Yield in (t/ha)**
	Initial	Inter.	Final	Inter.	Final	Initial	Inter.	Final	Inter.	Final	
Neemate 10G@ 10g /plant	520	340	420	34.60 (36.01)	19.20 (25.93)	21.00	18.00	18.67	14.31 (22.22)	11.05 (19.34)	17.02 (12.19)
Neemate 10 G @ 15g /plant	473	273	333	42.21 (40.50)	29.53 (32.89)	21.67	15.67	16.67	27.70 (31.78)	23.49 (28.84)	17.32 (14.17)
Neemate 10 G @ 20g /plant	493	260	320	48.77 (44.29)	35.13 (36.29)	19.67	14.00	14.33	28.78 (32.45)	27.15 (31.37)	19.02 (25.38)
Samrat @ 250g/plant	500	400	433	19.97 (24.48)	13.40 (21.40)	20.00	17.67	18.00	11.60 (19.85)	10.02 (18.43)	16.72 (10.22)
Samrat @ 500g/plant	513	320	400	37.56 (37.76)	22.04 (27.99)	20.00	16.00	17.33	20.03 (26.56)	13.57 (21.55)	17.76 (17.07)
Samrat @ 750g/ plant	480	280	380	41.54 (39.77)	20.86 (27.15)	22.00	17.00	14.67	46.73 (43.13)	29.02 (32.58)	17.61 (16.08)
Carbofuran 3G at 0.3g/plant	480	240	300	50.06 (44.85)	37.48 (37.75)	20.67	11.00	14.67	46.73 (43.73)	29.02 (32.58)	17.61 (16.08)
Control	500	660	720	-	-	21.00	28.00	33.67	-	-	15.17 (-)
S.E. ±	14.71	11.23	11.85	1.25	0.91	0.70	0.53	0.60	0.74	1.32	0.32
CD at 5 %	N.S.	34.08	35.95	3.81	2.77	N.S.	1.60	1.82	2.25	3.73	1.00

* Figures in parentheses are arcsin transformed values.

** Figures in parentheses are per cent increase in yield.



N-Fix Nitrogen fixing liquid biofertiliser

N-Fix has the ability to fix atmospheric nitrogen for the plant.

It has an associative symbiotic relation with graminaceous plants, thereby making available atmospheric nitrogen (30-50% of N requirement) to various crops.

It secretes ammonia in the rhizosphere in the presence of root exudates, which helps nutrient uptake by plants.

N-Fix has the ability to synthesize auxins, cytokinins, vitamins and growth promoting substances such as Thiamin, Riboflavin, Indole Acetic acid, Gibberellins, Nicotinic acid and Vitamin B.

Its nitrogen fixing activity continues even after the existing sources of nitrogen have been exhausted.

Presence of organic matter, cellulolytic microorganisms and small amounts of humus can further increase the efficiency of N-Fix.

K-Sol Potash mobilizing liquid biofertiliser

K Sol is an eco-friendly bio-input which solubilizes and mobilizes the chemically fixed soil potash and insoluble potash compounds to an available form by separating them from the soil particles.

It enhances the availability of Mn, Fe, Mo, Bo, Zn, Cu, etc. in the soil if present in a non-available form.

It leads to early crop development by inducing early rooting and by aiding quick cell development in plants.

P-Sol Phosphate solubilizing liquid biofertiliser

Large amounts of phosphate fertilizers are used on a regular basis, but a large portion of applied phosphorus is quickly converted to the insoluble form and **only about 20-25% of applied phosphorus is useful**. A greater part of soil phosphorus is present in an insoluble form and hence is unavailable to the plant.

Phosphate solubilizing microorganisms are capable of solubilizing Ca, Al, Fe phosphates as well as rock phosphates and mineralizing organic phosphorus, making the phosphorus present in the soil available to the crop. [↑ 15%]

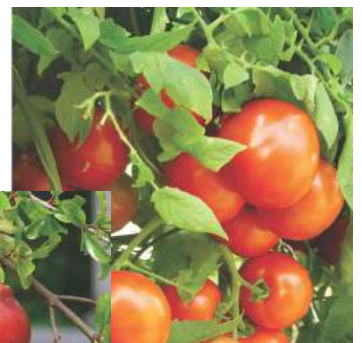
COMMON DOSAGE for all biofertilisers:

Soil application: 3 litres/ hectare. Applied either through a drip system or mixed with 1 ton of organic manure, preferably leaving a 7 day gap on either side before applying chemical fertiliser or pesticide.

Seed treatment: 5ml to 7ml per kg of seed.

Seedling dipping: Mix 50ml – 70ml in 15 litres of water & dip the seedling for 10 minutes before transplanting.

Tree treatment: Dilute and spray @ 600 ml/hectare.



Advantages:

- Fortify the soil with bacterial metabolites & are cheap and easy to handle.
- Have the ability to fix, solubilize and mobilise and cause uptake of N, P and K.
- impart resistance against insect pests and diseases and against plant pathogens like Alternaria, Helminthosporium and Fusarium (N-Fix).
- Help to reduce environmental pollution and the high costs, which result from chemical fertiliser usage and its residues, **K-Sol can save 30-40% of inorganic fertiliser.**





BioAll



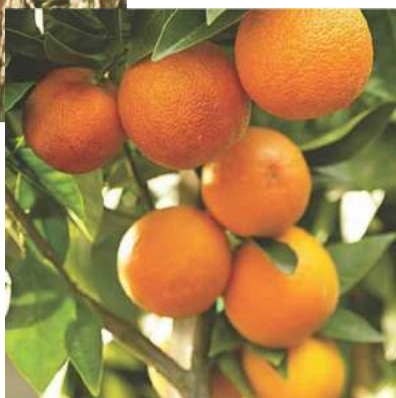
Nutrient mobilizing liquid biofertilizer

BioAll has the unique ability to enrich the soil with Nitrogen, Phosphorous and Potash. It efficiently **fixes atmospheric nitrogen, solubilizes insoluble and chemically fixed phosphates and has the ability to mobilize and solubilize soil potash and insoluble potash compounds** thus making all three of these essential nutrients available to the plant in a ready, available form.

It also enhances the availability of Mn, Mg, Fe, Mo, Bo, Zn and Cu, among others, in the soil.

BioAll provides the major nutrients (NPK) to the soil which results in higher yield. **BioAll** produces certain growth promoting substances such as Thiamine, Indol and Acetic Acid which help impart resistance to the plant from plant pathogens such as Alternaria and Fusarium.

It produces organic acids like Citric, Tartaric, Malic which increase the availability of phosphates in the rhizosphere.



All our biofertilisers are also available in **GRANULAR** form; for easy mixing into any NPK blend @ 10 kg/MT.



BioMicro

Micronutrient mobilizing liquid biofertilizer

BioMicro, a biological mix, is capable of mobilizing Iron, Zinc and Sulphur and making them available to the plant.

This combination of selected and compatible bacteria acts to give essential micronutrients to the plant.

Iron mobilizing bacteria efficiently make iron available to the plant. The metabolites secreted by microorganisms into the soil as strong chemical reagents and the activities of microbial enzymes are principal factors in this process.

Sulphur Mobilizing bacteria - mobilize insoluble and chemically fixed sulphates and make them available to the plant

Zinc mobilizing bacteria - play an important role in increasing the availability of Zn in soil, thus enhancing Zn accumulation.

It fortifies the soil with bacterial metabolites.

BioMicro produces many organic acids like Ferric acid, Nicotinic acid, Tartaric acid, Mallic acid etc. resulting in an overall increase in the availability of important micronutrients in the rhizosphere.

We also provide the constituent bacteria strains of BioMicro as individual biofertiliser products for specific application.



Bio-Zn

Zinc Mobilising Biofertilizer

Bio-S

Sulphur Mobilising Biofertilizer

Bio-Fe

Iron Mobilising Biofertilizer



Contract Manufacturing

Nico Orgo has recently constructed and inaugurated a state-of-the-art manufacturing facility for biologicals. Our new bio-lab spans over 14,000 sq. ft. and boasts dedicated space for microbial R&D and an incubator for new nematode control technologies.

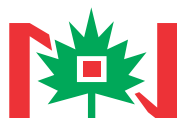
We will be very happy to share this new space, its assets and the benefits of a dedicated production team with you. We can offer you exclusive, pharma-grade production facilities, developmental help and sterile packaging and labelling services for your products in bulk or retail sizes. All material is stored under temperature controlled conditions.

Services:

- Capacity to manufacture over half a million litres annually.
- Modern Fermenters
- Dedicated rooms for powder manufacturing.
- Stable liquid formulations.
- Exclusive R&D
- Temperature controlled storage.
- Pharmaceutical grade sterility
- EcoCert Organic certification

Our Newest Microbials

- **Beauveria bassiana**
- **Verticilium lecanii**
- **Bacillus subtilis**
- **Metarhizium anisopliae**
- **EPeN - Entomopathogenic Nematodes**



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