

## ORGANIC HORTICULTURE CROPS

POMEGRANATE / ANJEER- FIG / PERU - GAUVA / CUSTARD APPLE - SITHAPHAL /

APPLE BEAR / ORANGE / LEMON / DRAWF MANGO.

ORGANIC GROWN PLANT NEEDS ARE NUTRIENTS, WATER & SUNLIGHT AND BIODIVERSITY.

NUTRIENTS - SOLID FORM - [KHUBA SOIL CONDITIONER](#)

- That natural nutrients function as currency for the bacteria, fungi etc in the soil to exchange them with the plant for carbon & sugar. Which is known as carbon exchange by the live soil.
- The live soil kills predators which attack the plant and simultaneously converts those predators to nutrients to continue its carbon exchange.
- If the same live soil is unable to get the nutrients to exchange they themselves become predators and promote to attack the plants which are known as disease from the soil.
- If we provide natural nutrients, the soil becomes fertile and live, and such soil becomes porous leading to increase in water holding capacity, softer soil etc which in turn avoid infestation by rodents like rats etc and also keep the surrounding cool thus helping the plants.
- The plant which are provided with nutrients, in turn generate sugar, which is converted to protein. The protein converts to different enzymes are generated which function for overall growth, health & yield of a plant.
- A healthy plant is able to protect itself from any pest, disease and any variations in the climate.
- Therefore it becomes quite essential to provide sufficient natural minerals in sustained manner for overall growth of the plants. Such a product is provided as Khuba Soil Conditioner.
- Therefore providing a proper fertilizer becomes most essential.

NUTRIENTS - LIQUID FORM - [GROWTH PROMOTER](#)

- Liquid fertilizers are to be used for drip irrigation and as supplement to make available the nutrients for a healthy plant.

PEST & DISEASES - [NATURAL HORTICULTURE OIL](#)

- How do we define a healthy plant? A healthy plant is the one which is capable of producing 12+ brix of sugar to further manufacture proteins & enzymes as mentioned above.
- Nature has provided food for every living being, therefore the food suitable for humans is not desired by insects or pests. Basically the digestive systems are different as you can see that cow can convert grass to milk, which cannot be done by humans. Similarly no insects / pests can eat from a healthy plant, because their digestive system is designed to eat plants producing sugar below 12 brix. A leaf eating insect can only eat a leaf which has sugar content between 6 to 8 Brix and grass hopper between 7 to 11 Brix. If the insect eat high sugar food they die. Hence they avoid eating plants producing high level of sugar above 12 brix.
- But the plants under stress conditions, like lack of sunlight etc start producing sugar below 12 brix. Under such conditions they are susceptible to pest and disease attacks.
- Such effects can be controlled by good sanitation, by use of natural oils which can be delivered through the roots and also used for spraying.
- Natural horticulture oil strengthens it from within and kills any predator which attack it. The insects loose their hunger, loose their capacity to populate and thus die out.
- Therefore use of Natural Horticulture Oil helps in proper sanitization, and help keeping the pests & diseases at bay.

## SUNLIGHT

Maintaining wide spacing reduces the seed requirement and supports easy air and sunlight penetration in the crop canopy, leading to better and healthier cane growth. It also allows for easier intercultural operations.

## INTERCROPPING / PEST CONTROL / WEED MANAGEMENT.

Practicing intercropping (which is possible due to wider spacing) thereby increasing effective utilization of land, giving additional income and reducing weed growth by 60%. & reduce water requirements to a very large extent.

Crop friendly intercropping details are well know to farmers. Intercropping increased nutrient elements N, P, K and O.M, while decreased pH and EC in the soil than control and that improve soil fertility properties through the decompose of intercropping crops roots and secrete acids into the soil and put P. Intercropping has the ability to symbiotically associate with certain soil microbial such as rhizobia, which fix atmospheric nitrogen.

Nitrogen & Carbon fixing 1) ಹುರುಳಿ- Horse gram 2) ಅಲಸಂದೆ - black eyed pea 3) ಹೆಸರು ಕಾಳು - Mung Bean 4) ಉದ್ದು -Black gram 5) ನುಗ್ಗೆಕಾಯಿ - drumstick 6) ಮೂಲಂಗಿ – Radish & many more as locally available.

For pest control 1) Marigolds 2) Garlic 3) Tulsi 4) Onion 5) Lemongrass 6) Chilli 7) Castor oil plant 8) Gliricidia 9) Mustard 10) Tulsi and many more as locally available.

Boundry cropping recommended: Castor (audal kannada)

Solar Pest trap available from [www.krishibandhu.in](http://www.krishibandhu.in) Cell No: 9900003891. Recommended 1 unit per acre.

Intercropping is an alternative to chemical pesticides. It is based on the ecological relationship between living organisms, shaped over millions of years. The roots of the plants release exudates forming a thin, nutritionally rich layer around them. This layer is called rhizosphere. This rich environment attracts several microorganisms, through chemotaxis, and they compete for this niche. Some of these fungi and bacteria live in symbiosis with the plant, promoting mutual benefits. The exudation of polysaccharides and chemical signals by the roots favors the establishment of these beneficial microorganisms, which in return may prevent the growth of plant microbial pathogens. The refined molecular communication between plants and microorganisms induces transcriptional responses in each other, resulting in a set of physiological responses and morphological changes in plants.

The health of plants is strongly influenced by their microbiota and microorganisms from the soil. In ecologically balanced environments, such as forests, the soil microorganism's bank has enormous diversity.

Thus biological control occurs naturally through ecological interactions. In agricultural systems, microorganisms that suppress plant enemies are called MBCAs—microbial biological control agents (Köhl, Kolnaar, & Ravensberg, 2019).

However, the success of biocontrol depends on a series of biotic and abiotic environmental factors that are directly influenced by agricultural practices, such as soil management and the application of agrochemicals. The restitution of soil microorganisms in agricultural systems is a practice that has been showing good results in the vigor of plants. The effects generated by these microorganisms increase the growth and productivity of plants of agronomic interest (Singh, Pandey, & Singh, 2011). Microorganisms can promote protection against phytopathogens by inducing systemic resistance (ISR) in plants or by antagonistic interactions between MBCAs and opposing organisms.

These mechanisms occur through interactions between plant–microorganism and microorganism–microorganism. The sum of these interactions reflects on the success of the biocontrol and, consequently, on the health of plants. This set of interactions involves refined interspecific communication, through molecular signals that trigger cascades of metabolic responses, both in plants and in microorganisms. (Venturi and Keel, 2016). Studying these phenomena simultaneously, in vitro, is still a challenge due to the large number of molecular signals involved in these communications and the complexity of the responses induced in the ecological system. However, different studies reinforce the influence of interspecific interactions and the importance of the variability of species in the soil community and plant microbiota (Koch et al., 2018).

#### WATER & SOIL EROSION MANAGEMENT.

- Bunds at the boundary.
- Check the water flow in the land, and to avert water taking away the rich top soil, create trenches of 3 X 3 X 6 feet where ever required.
- You can also fill it with waste crop to create excellent manure.

Note: DO NOT BURN ANY CROP WASTE in the field.

#### GROUND PREPARATION NEW PLANTATION : Use NAVA DHANYA (MINUS 50 DAYS)

- MONOCOT SEEDS 1.Corn 2.Wheat 3.Maize 4.Paddy 5.Barley 6.Finger millet 7.Pearl millet 8.Barnyard 9.Amaranth 10.Buckwheat 11.Finger millet 12.Foxtail millet 13.Kodu 14.Little millet 15.Proso millet 16. Sorghum.
- DICOT SEED 1.green gram 2.black eyed beans 3.lentils 4.Indian Brown lentils 5.pigeon peas 6.kidney beans 7.green peas 8.White peas 9.split black gram 10.black gram beans
- SICOT / OIL SEEDS 1.groundnut 2.rapeseed 3.mustard 4.soybean 5.sunflower 6.sesame 7.kusbi

Make mixture of Monocot + Dicot + Sicot any seeds in equal proportion to create nava dhanya. The Nava dhanya start to flower between 45 ~ 50 days, then the entire crop is to be mulched and thus creating a healthy field for cane growing.

#### PROOF OF ORGANIC GROWTH / SELF CERTIFICATION.

- To provide information of the crops grown organically, kindly download the app from krishibandhu apitra mitra on google playstore. Site: <https://play.google.com/store/apps/details?id=com.i9930.android.app.krishibandhu>
- For any assistance call : 9900003891.

#### DENSITY OF PLANT.

- LOW DENSITY: 18

#### KINDLY REFER

- SOIL HEALTH IMPORTANCE : <https://khuba.in/soil-health-importance>
- COVER CROPS: <https://khuba.in/soil-health-cover-crops>
- SOIL & HUMAN HEALTH: <https://khuba.in/soil-%26-human-health-1>

RECCOMENDED CHART FOR FRUIT: POMEGRANATE / ANJEER- FIG / PERU - GAUVA / CUSTARD APPLE - SITHAPHAL / APPLE BEAR / ORANGE / LEMON / DRAWF MANGO.

YOU CAN CHOOSE ANY ONE OF ABOVE AS MAIN CROP = A

SECONDARY CROPS CAN BE ANY OTHER OF ABOVE = D

BOUNDRY CASTOR							
BOUNDRY CSATOR	A Spacing 12 feet	C Broadcast For Weed Management	D Spacing 9 feet	C Broadcast For Weed Management	A Spacing 12 feet	BOUNDRY CASTOR	
	B Spacing every 2 ft		B Spacing every 2 ft		B Spacing every 2 ft		
	DISTANCE A to A / ROW TO ROW 18 Feet						
	A	C	D	C	A		
	B	C	B	C	B		
	A	C	D	C	A		
	B	C	B	C	B		
	A	C	D	C	A		
	B	C	B	C	B		
A	C	D	C	A			
BOUNDRY CASTOR							

CALCULATED FOR 1 ACRE APPROXIMATE.

A= SPACING BETWEEN PLANT TO PLANT 12 / 10. GROW ANY OF : POMEGRANATE / ANJEER- FIG / PERU - GAUVA / CUSTARD APPLE - SITHAPHAL / APPLE BEAR / ORANGE / LEMON / DRAWF MANGO. – NUMBER OF PLANT 185.

B= MARI GOLD CHILLY EVERY 2 FEET. TOTAL NUMBER OF PLANTS 1,200/-

C = BROAD CAST FOR WEED MANAGEMENT 1) ಹುರುಳಿ- Horse gram 2) ಅಲಸಂದೆ - black eyed pea 3) ಹೆಸರು ಕಾಳು - Mung Bean 4) ಉದ್ದು -Black gram 5) ನುಗ್ಗೆಕಾಯಿ - drumstick 6) ಮೂಲಂಗಿ – Radish & many more as locally available. MIXUTRE OF ALL SEEDS IS PREFERRED. TOTAL 15 KG SEEDS.

D= SPACING 9 FEET. FOR BIO DIVERSITY & AVOID DISEASES, GROW ANJEER- FIG / PERU - GAUVA / CUSTARD APPLE - SITHAPHAL / APPLE BEAR / ORANGE / LEMON / DRAWF MANGO, PAPPAYA, DRUMSTICK , BANNANA, GLERECIDIA (GOBBUR GIDA). MINIMUM 3 OF ANY OF ABOVE ARE TO BE INCORPORATED IN D ROW. MAXIMUM ALL CAN BE UTILIZED. PLANTS REQUIRED 266

BOUNDRY: CASTOR (AUDAL) ALL AROUND TO SAFE GUARD AGAINST WIND & PEST CONTROL. AROUND 80 PLANTS.

NOTE: AUTOMATIC SOLAR INSECT TRAP TO SWITCH ON AT 6 PM TILL 10 PM ONLY. 2 UNITS PER ACRE.

[www.krishibandhu.in](http://www.krishibandhu.in)

PER ACRE – 500 PLANTS APPROX – DRIP irrigation		NHO	GP	KSC
DAY – 50 (Minus 50) Make mixture of Monocot + Dicot + Sicot any seeds in equal proportion to create nava dhanya. The Nava dhanya start to flower between 45 ~ 50 days, then the entire crop is to be mulched and thus creating a healthy field.				
<b>GROUND PREPERATION - SANITATION</b>				
<ul style="list-style-type: none"> <li>Remove crop residues. Use Natural horticulture oil 1 liter for every 200 liter of water ( 1 liter per acre) and spray on the ground.</li> <li>If the plot had any earlier reports of any diseases than use 1 liter for every 100 liter of water and spray on the ground.</li> </ul>		1~ 2 Liters		
<b>SEEDING / PLANTATION</b>				
<b>DAY 0</b>	<ul style="list-style-type: none"> <li>At the time of planting / seeding use 1 Kg of Khuba Soil conditioner and mix with soil.</li> <li>Mix 250 liters of water with 1.5 liter of Natural horticulture oil and 1 kg Growth Promoter</li> </ul> DRENCH ½ liter per plant / seedling	1.5 liter	0.5 Kg	500 Kg
<b>365 DAYS</b>	<ul style="list-style-type: none"> <li>Use Natural horticulture oil 35 Milliliter &amp; Use 10 grams Growth Promoter per day in DRIP</li> </ul> Calculate on frequency of watering and accordingly add above to DRIP IRRIGATION system. Note: Let water flow first and start feed later.	13 liter	3.6 Kg	
<b>Day 180</b>	<ul style="list-style-type: none"> <li>1 Kg of Khuba Soil conditioner and mix with soil.</li> </ul>			500 kg
<b>Every 30 Days</b>	February Till July <ul style="list-style-type: none"> <li>One spray Every 30 day</li> <li>Mix 500 milliliter of Natural Horticulture Oil &amp; 100 grams of Growth promoter to 200 liters of water (6 Sprays)</li> </ul>	3 ltr	600 gms	
<b>Every 20 Days</b>	August till January 6 Months. <ul style="list-style-type: none"> <li>One spray every 20 days.</li> <li>Mix 500 milliliter of Natural Horticulture Oil &amp; 100 grams of Growth promoter to 200 liters of water (9 Sprays)</li> </ul>	4.5 ltr	900 gms	
<b>STOP</b> Using sprays 30 days before harvesting.				
<b>PEST SIGHTING</b>				
<b>Heavy</b>	2 liter of Natural Horticulture oil for every 200 liters <ul style="list-style-type: none"> <li>Spray every 5<sup>th</sup> day till the pest disappear.</li> <li>There after spray same solution after 10 days</li> <li>Once the pest are controlled, continue with lower dosage as above.</li> </ul>			
	<b>TOTAL</b>	22 ltr	6 Kg	1000 Kg

In the event of any pest attack the cost may go up by 5 to 10%



## KHUBA SOIL CONDITIONER

**ONE STOP SOLUTION**, farmers do not need any other fertilizer to grow any crop in any kind of soil. Khuba Soil conditioner delivers all nutrients together.

**SUSTAINED RELEASE**, makes availability of nutrients for entire tenure to the life of plant. This ensure production of sugar and supply of food to living organisms in the soil to provide nutrients, back to the plant for better growth and healthy yields.

**NUTRIENTS** Macro & Micro available having sustained release, helps in better health of soil organism to ward off any diseases, establish better network for communication between plants for nutrients exchange or ward off predatory attacks, leading to reduced use of pest control. Thus a robust healthy plant & a healthy produce.

**HEALTHY FUNGI** in soil are natural controller of predator like nematodes, because fungi are carnivorous by nature and prefers nematodes and they also converts any dead insects or animals naturally. Thus reducing need of pesticides, while making the soil healthy.

**HYGROSCOPIC** nature helps, retain water fed, keeps surrounding cool and also draws water from atmosphere helping plants to grow better.

**REDUCTION OF FERTILIZERS USE** over a period of time, becomes possible as the fertility of the soil increase and becomes healthy.

**DAMAGED / OVERFERTILIZED LAND RECOVERY** for agriculture is possible with use of natural soil conditioners on multiple application. The yield can be enhanced with slight increase of doses in the initial year.

**REDUCTION OF PEST CONTROL**, providing required nutrients enables plant immune system and it is directly linked to its robust health. Plants need passive immunity derived from balanced chemistry, and active immunity due to plant biology. Natural immunity means reduction of pest controls.

### **BENEFITS**

- It includes broad and diverse formulations of products that provide plants with nutrients and/or improve organic matter in the soil.
- They are applied to plants and/or soils to improve soil fertility, plant vigor, produce quality and yield. Our products can be used in both organic and conventional agriculture.
- It includes three specific product categories: Natural nutrients, Natural mineral and soil improvers.
- Its main function is to provide nutrients under organic forms from natural, mineral and organic materials.
- It reduces dependency on chemical inputs & pest control.
- It enhances the biological activity and biodiversity of soils, the quality attributes of produce as well as yield.
- It helps in facilitating, slow release of nutrients in response to the needs of plants.
- It helps efficient use of water to render crops more resilient and drought-resistant.
- It enhances crop resistance to erosion by improving the soil's organic matter content.
- It reduces soil poisoning caused due to excessive application of pesticides, weedicide.
- It enriches soil with bio flora & fauna, reduces soil born / fungal diseases & gives higher yield.
- It is neutral to plants at time of stress in the event of excessive heat or water logging or cold seasons; whereas chemical fertilizers need controlled weather conditions for the proper intake of the nutrients, which is not possible.

- It has beneficial effects on Long and short term effects for plant grown including beneficial higher yield in spite of variations in the surrounding weather conditions which is beyond human control.
- It bears healthy plants yield high quality produce, & extends shelf life.

[COMPARISON CHART PDF](#)

## FAQ - FREQUENTLY ASKED QUESTIONS

Why do you call it soil conditioner ? Our product enriches the soil with required natural minerals to create a helpful and or conducive state of environment for plant growth. It boosts both nutrient efficiency and organic matter content in the soil.

What form ? Powder.

Do you have different products for various crops ? No our product is balanced with required minerals and is generally suitable for all types of soil.

If it is mineral enriched soil, can we plant seeds directly in your product ? Yes you can plant seeds directly, but it is not advisable as cost of cultivation goes up.

Is it organic ? It is organic as the contents are combination of natural minerals.

**Does your product play any additional role ? yes our product has capacity to retain water and keep the surrounding area cooler and nutrients are released in sustained manner as per the dynamic needs of the plant, thus making the plants healthy & robust.**

Test reports ? Test reports are available on the web site.

## APPLICATION :

**How can you use all required material at once? Our product has been designed for slow release of nutrients in response to the dynamic needs of plants.**

What will happen if it rain heavily after total application ? if the top soil is carried away due to heavy rains, our product is lost along with it. In such fields, it is advisable to apply in parts.

**What happens if your product falls on leaf or roots directly ? Our product does not harm in any way because our product is neutral in nature.**

What if we use excess ? It does not harm the plant, as you can grow any plant directly in our product, but cost of cultivation goes up.

## WATERING THE FIELDS:

What if the farmer is unable to water his farms after application? Our product does not harm the plant in such event. Yet for better results it is advised to water the crops after application as early as possible.

What are the effects of excess water in the field? Our product efficacy is not lost in the event of water logging, until and unless it is washed away.

Effects of water logging ? Our product efficacy is not lost in the event of water logging.

What are effects in the event of hot or cold season? our product does not create stress in such events.

#### **COMBINING WITH OTHER:**

Can we use conventional organic fertilizer with your product? Yes our studies have shown that use of organic fertilizer preferably farm waste and the like in combination with our product yield good results.

**What other fertilizers are required to be used with your product? If the farmer uses required quantity of our product, then we do not need any chemicals based fertilizers.**

How can we compare? Use our product independently to know the difference on output and cost of cultivation.

#### **SOIL IMPROVEMENT:**

**How do you improve soil? Our product carries required natural nutrients which nurture the soil with organic matter that reduces dependency on chemical inputs.**

**What do natural minerals do? They restore depleted mineral content and maintain soil fertility to nurture plant growth.**

**Does it enhance biological activity? Our product enhances biological activity and biodiversity of soils, it decomposes organic material to its essential elements. thus improve the efficiency of nutrient use to produce more robust crops, thus help enhancing the quality attributes of produce as well as yield.**

**Does it improve organic matter? Our product enhances organic matter in soil.**

**What if the lands are alkaline or acidic? Our product is Neutral (7 pH) by nature, it helps, to sustain, thrive and enhances the microorganisms, decompose other available organic material to its essential elements. which naturally balance the soil.**

**Can we use your product in fields which were earlier over fertilized, over exploited and have now become barren ? Yes even in such fields our product has shown excellent results. We suggest increase usage, slightly higher dosage for such barren land in the initial year.**

#### **INDICATOR OF HEALTHY PLANTS IN FIELD.**

One method is to measure sugar in plant, understand brix level. As a generality plants having 12+ brix, naturally become pest and disease free and considered healthy.

**Reduction of grass & weed in healthy farms, having robust plants, is clearly evident, as the insects cannot feed on healthy plants, they migrate to feed on surrounding vegetation like grass, weeds etc. Thus making the enemy our friend.**

The plants which are healthy exhibit glossy shining surface, due to production of oleochemicals. These oils are natural pest repellent produced by the plants.

The field will be free from dead leaves, dead insects or birds as the fungi and bacteria are able to convert them into plant usable nutrients. The soil starts becoming soft and spongy.



## **VISIBLE RESULTS:**

Will there be delay in results? Yes in comparison with chemical based fertilizers by about two weeks.

Why the delay? We allow nature to convert the mineral naturally for plant uptake while allowing the soil health to improve simultaneously.

Will such delay be reduced? Yes after minimum 3 to 4 application, and soil health is robust.

When can the results be seen in farms? Visible results can be seen after 4 weeks of application and major changes can be seen after multiple application.

**How will the final produce be? Farmers have reported the yield to be fully grown, glossy, and consistent in size, weight, taste better, have natural aroma and have longer shelf life.**

## **NATURAL HORTICULTURE OIL : USED AS FOILAR SPRAY & GROUND APPLICATION.**

**It reduces insect feeding and acts as a repellent. It also interferes with insect hormone systems, making it harder for insects to grow and lay eggs and can also repel and reduce the feeding of nematodes. Other components of kill insects by hindering their ability to feed.**

- **Natural Insect & Pest Repellent, Natural Fungus & Nematode Preventer.**
- **Made from plant extracts, to support regain health of plant & soil. By building natural resistance from within, in event of stress.**
- **After its utility it naturally converts itself as fertilizer.**

Natural Horticulture Oil is a Non edible emulsified containing multiple natural oil's Azadrachtin, Citral, Linalool, Geraniol, Citronellol, Linalyl acetate, geranyl acetate,  $\alpha$ -Pinene, Limoneneg, Terpenolene,  $\alpha$ -terpineol,  $\beta$ -Ocimene, Methyl heptanone, menthol, menthone.

**Natural plant oils are accepted by plants, they support them for healthy growth, and reduce dependence of Pest control, by natural products that has greater environmental benefits than using chemical pesticides.**

- **It has a broad spectrum of activities in the total crop care segment.**
- **By controlling, biotic and abiotic stresses and improving crop health and its yield.**
- **Naturally converts itself as fertilizer, helping soil regain its health and reduces application.**
- **It is eco-friendly and helps to maintain the Ecological balance.**

## **USES**

- **Protects from pests, It has, multipurpose utility for the plant acting both as pest repellent, bactericide and a fungicide. It works on arthropod pests that often eat vegetables, including tomato hornworms, corn earworm, aphids and whiteflies.**
- **Natural Horticulture Oil is an effective natural repellent that gets rid of over 200 species of insect. List of some of the most common insects can be controlled are Aphids, Mites, Scale, Leaf hoppers, White flies, Caterpillars, Mealy bugs, Thrips.**

- **Natural oils are great fungicide, Natural Horticulture oil prevents and kills fungus on your plants. Use it for powdery mildew and other common fungal diseases, including Black spot, Scab, Rust, Leaf spot, Anthracnose, Tip blight etc., In addition; it also controls common fungi that grow on vegetable plants, including: Mildews, Rusts, Leaf spots, Wilts, Stem rots.**
- **Fight with bacterial diseases for plants effectively. Our Natural Horticulture oil can kill fire blight, a bacterial disease that causes the leaves of plants to wilt and appear as though they have been burned and can be a good Bactericide for plants.**
- **It helps fungi to thrive. Fungi are carnivorous by nature. Healthy fungi in turn control nematodes.**
- **Beneficial to earth worms. The chemical pesticides can harm earthworm, natural oil has the opposite effect by encouraging organic activity, which makes the soil healthy.**
- **It does not affect the natural enemies of plant. Safe to use with beneficial parasites, predators & primates and thus offers long lasting crop protection system.**

## FIELD APPLICATION

When to apply ? at least a week in advance to prevent pest attack as a precautionary measure, which helps a great deal in control of pests at later stages.

So is it preventive care? Yes if the plants lack sunlight, or due to variation in climatic conditions the plants start losing their resistance. It is only then plants need support to avoid any attack from unwanted sources. Or product should be used as preventive care so that the plants regain their health to ward off any pests.

Can I use your product after pest attack ? No we do not recommend it use after pest infestation as our product is natural repellent.

What if I need to use it as I would like to grow organic food? Prevention is the best cost effective method, however if needed, the farmer may try higher dosages and increase the frequency of spray. Once the crops are healthy, farmer can switch back to regular usage.

When to apply? To be done at Pre flowering stage / Post flowering stage / Seed or fruit development stage or as required.

What quantity ? Recommended dosage is about 1 liter per acre with 100 liter mixed with water and sprayed.

Any advice? Regular inspection & spraying with natural oil's is helpful and effective. A dose of 1% solution is effective as a preventive spray, 2% to 3% solution can be used for tougher pests or disease. Begin with 1% solution and increase the percentage's if needed while observing the situation diligently and increase if the pest are persistent, and reduce the application time to every week. For effective results use it immediately after mixing with water.

## GUIDE LINES

Using Natural Horticulture oil is tricky as there are no precise set of rules for application.

We will have to understand the situation and consider the type of plant & type of pest or infection we are targeting. We will need stronger solution for tougher pest's and infection.

Regular inspection & spraying with natural oil's is helpful and effective. A dose of 1% solution is effective as a preventive spray, 2% to 3% solution can be used for tougher pests or disease.

Begin with 1% solution and increase the percentage's if needed while observing the situation diligently and increase if the pest is persistent.

Using Natural horticulture oil's do not kill insects they make them flee the area. So spraying at regular intervals is very important. For effective results mix required quantity only, to be used, immediately, do not mix and store for later use.

**What is a must ? Preventive care and application, coupled with regular inspection is essential for desired results from our natural repellents.**

#### **SOIL APPLICATION**

**Can it used directly on the soil ? Yes it can use directly on the soil at the time of land preparation to prevent soil borne disease and to help repel rodents.**

What quantity ? Recommended dosage is about 1 liter per acre with 100 liter mixed with water and sprayed.

What if fields which already effected with soil borne disease and rodents that are noted in our previous crops? Repeat application multiple times with a gap of 14 days.

Any other, suggestions or guide lines ? As our product is made from all natural oils, there are no precise set of rules for application. We will have to understand the situation and consider the type of plant & type of pest or infection we are targeting. We will need stronger solution for tougher pest's and infection.

#### **ENVIRONMENT**

Natural oils are biodegradable and do not persist in soil and water. Our natural oils are particularly useful as it possesses a wide range of desirable properties for pest management and is regarded as non-toxic to humans.

Since natural oils are a complex mixture of components, they work together within a plant and it is unlikely that pests will become resistant to them.

**It is biodegradable and non-toxic. It's safe for birds, pets, fish, livestock or other area wildlife making it safe and nature friendly.**

It does not create resistance or residue problems in any form.

**Natural Horticulture oil insecticide does not create a "Dead zone" around treated plants, trees or shrubs like other synthetic insecticides can. It only targets leaf-sucking and chewing insects. On the contrary you can find increase in flora & fauna.**

**Is it toxic to humans ? Natural oils are biodegradable and do not persist in soil and water. Our natural oils are particularly useful as it possesses a wide range of desirable properties for pest management and are regarded as non-toxic to humans.**

**Is it toxic to live stock birds, primates etc. ? It is biodegradable and non-toxic. It's safe for birds, pets, fish, livestock or other area wildlife making it safe and nature friendly.**

## INFORMATION FOILAR SPRAY

- Spray Natural horticulture oil directly onto visible mealy bugs for control. The insecticidal soap serves as a contact insecticide and does not have residual effects, so repeated applications are necessary for continued control.
- Natural horticulture oil can be applied directly to active infestations. It will kill all stages of bugs on contact.
- Natural horticulture oil applications will kill overwintering eggs and smother immature and adult mealy bugs when temperatures are below 85 degree Fahrenheit / that is below 29 degree centigrade.
- *Natural Horticulture oil will act as a systemic insecticide, poisoning these pests when they break through the plant's surface and hindering or outright stopping their growth and reproductive cycles.*
- Foliar spray, which acts as a contact poison that leaves behind no harmful residue. The foliar spray suffocates soft-shelled insects that produce honeydew while also killing the fungus it comes into direct contact with.
- Natural Horticulture oil should be applied at dusk or dawn. This reduces the risk to pollinators and beneficial insects visiting the plant during the day or night.
- Keep watch for infestations or bacterial and fungal infections before they become a problem. Apply a fresh application every 14 days.
- As a general application 1 liter of Natural Horticulture Oil is sufficient for 200 liters of water for preventive and regular sprays.
- If the infestation is severe increase concentration and frequency.

## INFORMATION GROUND APPLICATION

- The main difference between a spray and soak is that the soak is poured directly on the soil and absorbed by the plant. As a result, the oil becomes a systemic pesticide. Any insects piercing the plant tissue ingest the neem directly without harming pollinators or friendly insects that land on the plant.
- Soil drench lasts up to 22 days before requiring another application
- Reapplying soil soaks also aid in protecting plants from a potential infestation.

## GROWTH PROMOTER

- It helps in faster germination of seeds, seedling growth also used as seed treatment.
- The plants become healthier roots and strong stem with the use of this growth promoter.
- It is also helpful in the carrying the process of Photosynthesis resulting in an increase in growth rate, and improve the responses of plants to various stimuli and plant pathogen.
- To promote stunted growth .
- To increase flower development.
- To improve fruit establishment, fruit setting, fruit size and growth
- To promote root development
- To enable healthy plant growth and establish plant base.
- To promote new root development and plant growth

## HOW DO THEY HELP A PLANT UNDER STRESS

- Many mechanisms take place simultaneously, some of them produces different types antibiotics, and volatile compounds that motivate plant growth, which influence plant physiological processes.
- Khuba Plant growth regulators perform a significant role in plant developmental process and thus modulate plant replies to abiotic stresses. It plays a constructive role in decreasing the opposing effects of abiotic stresses on plants as it has acid neutralizing and cell wall stabilizing abilities and promotes plant developmental process.
- Khuba plant promoter commences its defensive role when present in plants under appropriate concentration repairs the negative effects and increases the restoration process in plants.
- Khuba Plant Promoter, help bacteria that live in the locality of plant roots and interact with plants and enhance their growth directly or indirectly are known as plant growth-promoting Rhizobacteria (PGPR). PGPR improve the plant growth and increase their yield as they improve the root growth and thus enhance the accessibility of micro-nutrients to the roots of host plant.
- Plant roots produces arrays of organic compounds that secrete form the roots as exudates and attract soil microbes including PGPR, as they are efficient source of carbon inside soil.
- Soil bacteria, maintain mutualistic interactions with plant roots that enable plants to grow well and tolerate several abiotic stresses.
- Rhizobacteria service plants to preserve an encouraging water status under water deficit condition by improving the growth of the root system. Plant roots also perform an imperative role in water use efficiency (WUE) and PGPR further augment the water absorption ability of roots under water scarcity. Such activity results an increase in growth rate, seedling emergence, and improve the responses of plants to various stimuli and plant pathogen, thus influencing the plant physiological processes.
- Khuba Growth promoter is a natural/herbal fertilizer, especially designed for the overall growth of the plants. These growth promoters are intended to accelerate the rate of growth and maturation of crops or plants, without disturbing their natural physiological actions. These premium quality plant growth promoters increase the yield as well as control the pests & pathogens. A highly effective and safe biological tonic, these growth promoters boost an all-round development of the crops by regulating their metabolic activities from root to the leaves.

## HOW DO WE USE

### FOILAR SPRAY

- Mix 2 gram per liter. Spray every 15 to 30 days interval, as required. Per Barrel of 200 liters - 400 grams of growth promoter. Hand spray of 20 Liters - 40 grams. Hand spray of 15 Liters - 30 grams.

### DRIP IRRIGATION

- Use 240 gram per acre. Use every 21 day interval, if required.
- Mix 2 gram per liter or Per Barrel of 200 liters - 400 grams of growth promoter.
- Use 3 liters per large horticulture plant at the base.

### SEED TREATMENT - APPLICATION

- Mix 2.5 gram per liter or per barrel of 200 liters - 500 grams of growth promoter.



- For sapling preparation Spray the growth promoter water in the beds where seeds are sown Immediately after sowing. or immediately after germination.

#### **BEST TIME FOR APPLICATION**

- Do not use under direct sunlight.
- Apply it in early hours or evening hours for beneficial results.

**WHY USE** Infections of pest attacks can kill plants by blocking the chlorophyll in the leaves from sunlight. The plant starves to death as a result. Hence we need external support for plants to thrive under stressed conditions like pest attacks or natural shortfall of sunlight or cold conditions to nurture back to health.

#### **COMBINING NATURAL HORTICULTURE OIL & GROWTH PROMOTER.**

**Our Natural Horticulture oil & Growth promoters can be combined together for foliar or soil application.**

#### **DISCLAIMER**

- Khuba Soil Conditioner / Horticulture Oil / Growth Promoter Product Disclaimer
- All information is given in the best of our knowledge and is believed to be accurate. Your conditions of use and application of the suggested products and recommendations are beyond our control.
- Khuba soil conditioners / Horticulture Oil / Growth Promoter are made from various natural minerals, plant extracts and an average combination is derived to create conducive environment for growth of plants.
- This information product do not imply the expression of any opinion whatsoever on the application for specific use for farming / agriculture. The information provided does not imply that these have been endorsed or recommended.
- The user has to test take trails at his own cost and has to ascertain the application of Khuba Soil Conditioners / Horticulture Oil / Growth Promoter depending upon the actual condition of fields & crops where he intends to use our product.



## **Pomegranate** (*Punica granatum* L.)

Pomegranate fruits are used for table purposes. They can also prepare processed products like juice, syrup, squash, jelly, anar rub, juice concentrates, carbonated cold-drinks, and anar dana tablets, acids, etc. Pomegranate fruit is nutritious, rich in minerals, vitamins, and proteins. The juice is useful for leprosy suffering patients.

### **Climate**

Successful pomegranate cultivation is essentially dry and semi-arid weather, where cold winter and high dry summer quality enables fruit production. Pomegranate plants can tolerate frost to some extent and may be considered drought-tolerant. The region with 500 m above from sea level is best suited for pomegranate cultivation.

The optimum temperature for fruit development is 35 -38 ° C.

### **Soil**

Considering the soil requirement, it can be grown under different soil types, from low-fertile to high-fertile soil. However, in deep loamy, it gives an excellent yield. It can tolerate salinity and alkalinity in the soil to a certain extent.

Soil having a pH range between 6.5 – 7.5 is ideal for Pomegranate farming.

### **Propagation Method**

#### ***Hardwood Cutting Propagation:***

It easy method, but its success rate is lesser, so this method is not popular among farmers. For Cutting selected from a one-year-old tree of 9 to 12 inches (25 to 30 cm) long, 4-5 buds are better for higher rooting and survival.

#### ***Air-Layering Propagation:***

It's the most common practice by farmers for raising new plants. For the air layering method, select 2 to 3 years old plants and air-layered followed by root treatment for better rooting.

From a single plant, around 150 to 200 rooted cuttings can be obtained.

The rainy season is best suited for layering. It takes around 30 days for roots. After 45 days, the layered plants should be detached from the mother plant.

Expert Pomegranate grower identifies detach time by the observing colour of roots when it starts to turn brown the layered cuttings are separated.

#### ***Tissue Culture Propagation:***

Tissue culture is an advance and rapid technique of the multiplication of plants. By using this technique, you can obtain diseases free planting material within a short time span.

### **Commercial Pomegranate Varieties**

These are the commercial varieties that grow in India.

Bhagwa, Mridula, Ganesh, Jyothi, Jalore Seedless, Kandhari, Phule Arakta, Phule Bhagwa Super Bhagwa Sindoor.

Bhagwa is the most cultivated variety due to its high demand for domestic and export purposes.

### **Pit Preparation And Planting:**

Ninety-days old Pomegranate plants are ready for transplanting into the main field in pits.

Prepare a suitable size of the pit is 60 cm x 60 cm x 60.

The ideal planting distance followed by farmers is 10 to 12 ft (3 to 3.6 m) between plants and 13-15 ft (3.9 to 4.5 m) between rows is recommended.

The optimum time for pomegranate planting is in the rainy season (July-August) when sufficient soil moisture is available for plants' optimum growth.

Fertilizer Management In Pomegranate Farming pomegranate can be grown even in the less fertile soil. Still, the recommended dose of fertilizers should be incorporated in the pit for better production and quality of fruits.

*The dose of manures and fertilizers varies according to types of soil fertility, genotypes, region to region.*

Pomegranate is a drought-tolerant fruit crop, which can sustain underwater scarcity to some extent.

Regular irrigation is also essential to reduce fruit splitting, which is the major disorder of fruits.

During winter, irrigation should be applied at 10 to 12 days of interval, whereas during summer at 4 to 5 days.

Most of the farmers supplied water through drip irrigation, saving water, and convenient to apply fertilizers.

Generally, Ambe Bahar is suggested where an irrigation facility is available. Otherwise, Mrig Bahar is preferred.

### **Training And Pruning In Pomegranate**

It is a promising technique to control vegetative growth and maintain the shape and size of trees to enable proper light penetration in the center of the tree, ease in cultural operations, spraying, and fruit harvesting.

There are two methods of training system followed in pomegranate.

1) **Single-Stemmed Method** – only one main shoot is kept by removing other shoots of the Pomegranate plant.

2) **Multi-Stemmed Method** – the Pomegranate plant bush shape is maintained by keeping 3-4 shoots at the base.

This method is very popular and commercially adopted by Pomegranate farmers because, even after a shoot borer, one shoot may provide yield instead of the complete loss.

### **Plant-Protection**

#### **Pests :**

1) Pomegranate butterfly (or) Fruit borer. (*Deudorix Isocrates*) It is a major pest that bore into the developing fruits, feeds inside, and makes fruit susceptible to fungal and bacterial infection.

Control: It can be controlled by bagging young fruits at the early stage with polyethylene bags.

2) Caterpillar. It makes holes in the main trunk and forms networks of tunnels inside it. Feeding on bark during nights and fill it with excreta.

Control: It can be effectively managed by plugging the hole with cotton dipped Natural Horticulture Oil, followed by covering it with mud.

### Diseases

1) Bacterial leaf spot or oily spot (*Xanthomonas axonopodis* pv. *punicae*): It is characterized by the formation of small-dark brown water-soaked spots on the leaf, twig, stem, and fruits. Cracking can be observed with the shining appearance at a severe stage of infection. It is most severe in the rainy season

Control: It can be measured to some extent by spraying of Natural Horticulture Oil at the rate of 10 ml/ liter and mixing with 1 liter of water on every fourth day, till the oily spot is cleared there after once every 10 day. There after continue as usual. Note: In the event of higher infection the natural Horticulture oil can be increased to 20 ml/ liter and used.

2) Fruit cracking or fruit splitting is one of the most severe disorders due to irregular irrigation, boron deficiency, and sudden fluctuation in nocturnal and diurnal temperatures; fruits are cracked.

Control: Maintaining proper soil moisture levels & selecting cracking tolerant variety are some preventive measures. Further spraying of Growth promoter 2.5 gm/ liter with Natural Horticulture Oil 10 ml / Liter disease can be minimized.

3) Sunburn is also a major problem if fruits are not harvested at the proper stage. A blackish round spot appears on the upper surface of fruits. It reduces the cosmetic appeal of fruits.

Control: Bagging of fruits maintains colour and attack of fruit flies.

### Harvesting

Harvesting starts after 150 to 180 days from flowering to fruit maturity. But it depends on genotype, climatic condition, and growing region.

Harvesting of fruits should be done at the optimum maturity stage because early harvesting results from the dull, immature, and improper ripening of fruits. In contrast, late harvesting leads to more prone to the attack of disorders. However, Pomegranate is a *non-climacteric* fruit that should be harvested after at proper ripening stage.

The calyx at the bottom of Pomegranate fruits gets turn inward side is also a maturity index. Aril should be turned in deep red or pink. Fruits of pomegranate should not be over-ripened. Dark rose pink colour should develop on the surface and dark pink aril mostly preferred by the consumers.

### Yield

A healthy Pomegranate tree can produce up to 12 to 15 kg/ plant yield during the first year. From the second year onwards, the yield per plant is around 15 to 20 kg.

After sorting, fruits should be washed with solution sodium hypochlorite at the rate of 100ppm in water. This treatment will be helpful to reduce microbial contamination and to maintain a longer shelf-life.



## Grading Of Fruits:

Their size and weight generally grade pomegranate fruits. However, grading standards are varying from country to country. Grade specifications as per National Horticulture Board for the export purpose are as follows.

Grade	Fruit weight
Supersize	750 gm
King size	500-700 gm
Queen size	400-500 gm
Prince size	300-400 gm

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Anjeer – Fig is an Asian species of flowering plant in the mulberry family. This is commonly called *Ficus carica*. This plant is native to Central and West Asia. This plant is grown or is grown all over the world either as an ornamental plant or as a fruit-bearing plant.

Names of Fig fruit (anjeer fruit) in India:- Tealgu - Athi pallu, Tamil and Malayalam - Atti pazham, Bengali - Dumoor & Oriya- Dimiri.

Varieties: Black Mission, Kodota, Ridriatic, White Adriatic, Calimirna, Kalamon, Desert King, Conadira, Brown Turkey, Celeste. In India we have the commercial importance varieties of Poona and Dinkar along with economic value are divided into Smirna type which is found especially in Iran. These varieties are called Seh, Sabz, Paves, Shah Anjir.

**Edible anjeer fruit (or) Common Figs:** Individual flowers are long-styled pistillate (**Pistil** meaning the female reproductive part of a flower) and development of fruit without fertilization or seeds. Popular varieties of anjeer fruit are – Brown Turkey Conardia, Kadota, Poona, Mission.

**Wild Figs (or) Capri Figs:** These types are functional staminate flowers and short-styled pistillate flowers (Pistil meaning the female reproductive part of a flower), Capri figs are not eatable but grown because it is used for a fence or for support in term of setting fruits and pollination.



**San Pedro Figs:** These are intermediate fig types where the first crop is Parthenocarpic, in the first season fruit produced is normal, but the fruit produced in the second season is pollinated by a special tool.

## CLIMATE

In South India, Marseilles bloom on hills at an altitude of 1,000 feet, In the tropics, anjeer fruit usually grow between 2,700 and 5,600 feet. The Anjeer tree can survive frosts of 10 ° to 20 at favorable sites. Spring rains should be dry weather with your rains if it is intended to bear fresh fruit. Rainfall during fruit development and growth is harmful to the crop, causing the fruit to germinate. The semi-arid tropical and subtropical regions of the world are suitable for fig-growing if irrigation facilities are available. But too hot, dry will irrigate the fruit even if the plants are getting proper irrigation facility.

## SOIL

Anjeer fruit can be grown on a wide variety of soil, light sand, rich clay, heavy clay or limestone, soils with moderate drying and a good deal of lime are preferred for crop drying. Highly acid soils are unsuitable. The pH range should be between 6.1 to 6.7. The anjeer tree is very tolerant to moderate salinity. Plants grow well in hot and dry winds from April to June.

## PROPAGATION METHODS FROM MOTHER PLANT OF FIG

There are lots of techniques are used for the propagation of figs such as sprouting, hardwood cutting, air laying, and grafting.

- But the most commonly used method of commercial use of Anjeer trees is hardwood cuttings. While making cutting make sure the size of hardwood cuttings should be about 25-30 cm long and 0.7 to 0.8 cm thick. These cuttings should be taken especially in August after two months of the rainy season for 1.5 to 2-year-old shoots.
- It is then planted in a polyethylene bag with the root mixture.
- The cuttings can also be rooted by dipping in any other moist medium.
- Because cuttings placed under fog usually grow faster (in a month)

## LAND PREPARATION

- DAY – 50 (Minus 50) Make mixture of Monocot + Dicot + Sicot any seeds in equal proportion to create nava dhanya. The Nava dhanya start to flower between 45 ~ 50 days, then the entire crop is to be mulched and thus creating a healthy field.
- The dimension of pits 2 feet are dug at least a month before planting.
- The distance between trees is approximately 7 X 7 M but the minimum distance is maintained at 6 x 7m where figs grew in India for good crops.
- These pits are initially filled with Khuba Soil conditioner, with combination of Natural Horticulture Oil & Growth Promoters for sanitization and boost the growth of sapling.
- Planting depth should not be more than be 3 inches
- It is recommended that the delay of planting until the end of the winter season.

## FERTILIZERS AND DISEASE PREVENTIVE CARE

Fertilization of plants mainly depends on the type of soil type because the soil doesn't have enough nutrients, pH level then according to that doses of fertilizer has to increase in this case.

- Fig trees grow well in alkaline soils where ph. the level is above 6.
- Sometimes it gives Lime as doses to the soil to increase the pH if less than 6
- The composition of fertilizers and compost required at different stages of plant growth
- Usually, plants become more stable after 4.5 years of planting.
- Refer to chart for fertilization with frequency

#### Irrigation system for Fig plantations

- Plants should not be heavily irrigated during the fruit growing period
- In Summer Season like in May to June make sure plants get the water in every 5 days intervals
- In winter in Jan to the end of April make sure plants get the water in every 14 to 15 days intervals
- Per plant should get at least 18 to 20 liters of water and that also through the drip irrigation system.

#### PEST AND DISEASE MANAGEMENT

Some of the pests that infection the fig tree are stem borers, beetles, leaf defoliators, scale insects, and fig flies. Insect infection is rare in dried regions with harsh climates. Some insects can cause problems in the field like birds, squirrels, etc. One way to control pests is to beat the drums used in small farms. Bird nets made from plastic or nylon are used to cover the Anjeer trees to protect the birds.

Rust and leaf spot diseases affecting fig tree which can be controlled using natural horticulture oil as advised. Cut the diseased plant at ground level and grow a new crop from the suckers.

In addition to pests and diseases, there is also the possibility of sunburn, fruit breakdown, etc. Sunburn can be controlled by placing net shade. It is advisable do not to prune the fig tree in summer because it should not expose the branches in the summer sun. After a long dry period.

#### TRAINING AND PRUNING

- In Indian climatic conditions, light pruning is done in the last week of December. Only 3 or 4 buds on the previous growth shoots are left on the seedlings during pruning.
- The reason is to keep and maintain the height of the trees to a particular limit.
- Just make sure the main stem which is coming from the ground should not grow beyond 3-4 feet after one year of planting. So that this pruning will boost the Side shoots which is required to grow in certain limit so that number of branches or side shoot will get more number fig fruit. Production of figs per acre and when to Harvest fig fruits

#### FRUITING – YIELD.

- Cutting Method: Normally fruits are produced 24 months after the planting,
- Seedlings method has to be harvested in the third year of planting because it required 3 years to get fully mature to get quality fruits.
- Production of this fruit will get an increase in an incremental way in each year till the 8-9 years of the old plant after that their fruit production will remain constant.
- The main season of harvest is at the end of summer somewhere between Feb – March – April where fruits can be harvested in the gap of every 2-3 days.
- When the fruit is soft and bends toward the downside, it gives the signal to harvest.