

## ORGANIC GRAPES

FOR ORGANIC GROWTH NATURAL NUTRIENTS, WATER, SUNLIGHT & BIO DIVERSITY ARE ESSENTIAL.

### 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.

### FOILAR SPRAY - [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 lose their hunger, lose 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 and many more as locally available.
- Inter Row (Plant to Pant) recommended : Marigold & Chilly.
- 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.

#### 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>

## GRAPES CULTIVATION

<b>PER ACRE – BETWEEN 750 to 800 PLANTS – DRIP irrigation</b>		NHO	GP	KSC
<b>GROUND PREPERATION - 50 DAY Use Navadhanya and mulch as advised if new plot is being prepared.</b>				
<b>SANITATION</b>				
<ul style="list-style-type: none"> <li>Remove crop residues. Especially if they were reports of Powdery Mildew or Downy Mildew or Mealy bugs.</li> <li>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 / OLD 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 400 liters of water with 2 liter of Natural horticulture oil and 1 kg Growth Promoter DRENCH ½ liter per plant / seedling</li> </ul> <b>DRENCH ½ liter per plant / seedling - DO APRIL MONTH PRUNING / CHATNI AFTER 4 DAYS FRPM DATE OF DRENCH.</b>	2 liter	1 Kg	750 ~ 800 Kg
<b>DAY 1 To DAY 335</b>	<ul style="list-style-type: none"> <li>Use Natural horticulture oil 50 Milliliter &amp; Use 10 grams Growth Promoter per day in <b>DRIP</b></li> </ul> Calculate on frequency of watering and accordingly add above to DRIP IRRIGATION system. Note: Let water flow first and start feed later.	17 liter	3.5 Kg	
<b>335 to 365 day</b> Use 10 grams Growth Promoter per day in DRIP			0.3 Kg	
<b>Day 180</b>	<ul style="list-style-type: none"> <li>1 Kg of Khuba Soil conditioner and mix with soil.</li> </ul>			750 ~ 800 kg
<b>OCTOBER PRUNING (Cutting/Chatni) 4 days before pruning, Mix 400 liters of water with 2 liter of Natural horticulture oil and 1 Kg Growth Promoter DRENCH ½ liter per plant / seedling.</b> This is generally done in April & October twice a year. Sanitize the tools by making a solution of Natural Horticulture Oil.		2 Ltr	1 Kg	
<b>LIME WATER WASH A DAY BEFORE APPLICATION 50gm / 100 liter water – REPORT ANY PEST SIGTHING</b>				
<b>Every 30 Days</b>	April Till September 5 Months <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 (5 Sprays)</li> </ul>	2.5 ltr	500 gms	
<b>Every 20 Days</b>	October till February 5 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 (8 Sprays)</li> </ul>	4 ltr	800 gms	
<b>STOP Using sprays 30 days before harvesting.</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> </ul> Once the pest are controlled, continue with lower dosage as above.	<b>PEST SIGHTING REPORT</b>		
	<b>TOTAL</b>	27.5 ltr	7.1 Kg	1500 ~ 1600 Kg

- In the event of any pest attack the cost may go up by 5 to 10%
- Pest Management with Chilly & Marigold / Border of Castor plants & Solar Insect Trap Per acre 1 Nos.
- Weed management: Horsegram (Uruli) or Blackeyed Pea.(Alsande) or Green Gram (Hesaru) by broadcasting.
- Intercrop : Any 90 day growing Vegetable crop as per your local choice.

## 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 & Test reports are available on the web site.
- 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.**

#### 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.
- Can it be used in drip irrigation? No this product cannot be used in drip irrigation.

#### 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 FOR GRAPE FIELD : 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 FOR GRAPE FIELD : 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 from 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.

## INFORMATION FOR GRAPE FIELD : WHY USE FOR GRAPES.

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.
- Khuba Soil conditioners / Horticulture Oil / Growth Promoter specifically disclaims any responsibility or liability relating to the use of the suggested products and recommendations and shall under no circumstances whatsoever be liable for any special, incidental or consequential damages which may arise from such use.

## MEALY BUGS



Mealybugs, also called "woolly aphids", include many species with a wide range of host plants. They are a type of soft scale coated with a woolly, waxy secretion that provides protection and decreases the effectiveness of contact insecticides. Like many other soft-bodied insects, mealybugs damage plants by feeding on sap and other cell contents.

If your plants are covered in a sticky, waxy material that drifts like snow into branch crotches, you may have mealybugs. Check the plant carefully for tiny gray-to-pink, segmented insects with a white coating that appears powdery or cottony. Like scale, mealybugs feed on the liquids inside plant tissues, but unlike most scale, mealybugs are very mobile and may feed heavily in an area, shed their covering and move elsewhere. They can make an incredible mess, along with stressing plants and leaves.

### **HOW TO IDENTIFY A MEALYBUG INFESTATION:**

The plant is covered with small, white-to-grey insects with a cottony/wooly covering clustering close to the soil or near the growing tips.

- Honeydew is present on plant surfaces, with or without sooty mold.
- Infested plants may have a distorted stem and/or new growth.
- Reduced plant vigor and health overall after mealybugs have been identified.
- Ant presence near new growth harvesting honeydew.

### **HOW TO CONTROL**

- Mealybugs are easily blown off plants with blasts of water from a sprayer or garden hose, depending on the size of your plant. Spray it every two or three days, cleaning off any waxy debris that could be harboring larvae or eggs. Spraying in the morning or midday gives plenty of time for the water to dry from the leaves so that mildew doesn't have a chance to take hold.
- Controlling Mealy bugs and other types of soft scale can be difficult to control once populations have ballooned to large numbers. Small populations and immature stages of mealy bugs are usually easy to control with regular monitoring and treatment.
- **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 mealy bugs on contact. Use caution applying when pollinators are present.
- 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 should be applied at dusk or dawn. This reduces the risk to pollinators and beneficial insects visiting the plant during the day or night.

#### DOES NATURAL HORTICULTURE OIL CONTROL MEALYBUGS?

- When properly applied, Natural Horticulture Oil help control a mealybug infestation with minimal risk to humans, pets, or beneficial garden species.
- There are two key ways to apply Natural Horticulture Oil to an infected plant: foliar spray and if the infestation is heavy drench / soak the plant.

#### HOW NATURAL HORTICULTURE OIL WORKS

- Natural Horticulture Oil is created primarily from the seeds of Indian lilac (*Azadirachta indica*). It contains a natural insecticide called Azadirachtin. It can affect insects at various stages in their development.
- Azadirachtin disrupts an insect's feeding habits. This, in turn, prevents larvae from reaching the next growth stage.
- Natural Horticulture Oil clogs their airways of soft-bodied species of mealybugs or other scale insects, causing adults to suffocate.
- You can also use neem cake as an addition to your compost or plant food. The cakes provide nutrient-rich organic material. These cakes retain trace amounts of Azadirachtin, which plants absorb as a systemic insecticide.

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#### POWDERY MILDEW



#### WHAT IS POWDERY MILDEW?

- Powdery mildew is a fungal disease that affects a wide variety of plants. There are many different species of powdery mildew, and each species attacks a range of different plants.

- Its symptoms are easily spotted; however, it can spread to the point of being out of control quickly. The term "powdery mildew" encompasses a range of related fungal species which all possess similar symptoms, but each target specific hosts. Beans, cucumbers, roses, tomatoes and zucchini are highly susceptible to powdery mildew infection. Thankfully, all variations of powdery mildew are easily distinguishable from other fungal diseases, generally not fatal to the plant and have many treatments available to choose from.
- When the fungus begins to take over one of your plants, a layer of mildew made up of many spores forms across the top of the leaves. These spores are then carried to other plants by the wind. Powdery mildew can slow down the growth of your plant and, if the infection is severe enough, will reduce fruit yield and quality.

#### **IDENTIFICATION & APPEARANCE:**

- Commonly found on upper leaf surfaces, the most identifiable features of powdery mildew are the white or gray spots covering parts of or the whole leaf surface. Damage to the plant is usually minimal, but severe issues can result in leaves browning and eventually dropping. New growth is particularly affected by mildew issues. Inspection of the whole plant is recommended to catch mold and mildew issues early on.
- While most pathogenic fungi require water to infect hosts, powdery mildew is unique in that it does not.
- Shaded areas and dense plantings are hot spot areas for powdery mildew to grow and spread.

#### **HOW DOES POWDERY MILDEW SPREAD?**

- Powdery mildew spores typically drift into your garden with the wind, but if you've had powdery mildew occur in the past, new outbreaks may also come from dormant spores in old vegetative material or weeds nearby.
- Unlike many other fungal diseases, powdery mildew thrives in warm (60-80°F / 15-27°C), dry climates, though it does require fairly high relative humidity (i.e., humidity around the plant) to spread. In cooler, rainy areas, it does not spread as well, and it is also slowed down by temperatures higher than 90°F (32°C). It tends to affect plants in shady areas more than those in direct sun, too.
- Powdery mildew is a common fungus that infects plants when ambient temperatures are between 60 and 80 degrees Fahrenheit. This fungus infects both new and old foliage, often overwintering in perennials. White, powdery or fluffy patches of growth appear on surfaces of infected leaves, flowers and shoots that may drop from plants prematurely. Infected buds may not immediately show the white fruiting bodies, but instead emerge dwarfed or distorted.
- Symptoms usually appear later in the growing season on outdoor plants. Powdery mildew starts on young leaves as raised blister-like areas that cause leaves to curl, exposing the lower leaf surface. Infected leaves become covered with a white to gray powdery growth, usually on the upper surface; unopened flower buds may be white with mildew and may never open. Leaves of severely infected plants turn brown and drop.
- Unlike many fungal diseases, powdery mildew doesn't require standing water to germinate, but does need high localized humidity. When plants develop powdery mildew, open their canopy as much as possible, thinning out interior branches that are closely spaced and moving them away from structures that might cause air to stagnate.
- Life Cycle is a bit complicated but it is essential to stop downy mildew. The mildew overwinters as mycelium (filaments of tissue) or oospores (thick-walled round structures) in or on the plant. When the temperature is between 50-75, and the relative humidity is 85% or above, the oospores germinate.

- Germinating oospores produce sporangiophores. Sporangiophores emerge from the plant stoma, or pore, and look like a bunch of grapes. These sporangia are wind and water-borne. Each individual sporangia holds many zoospores.
- Zoospores blow to a leaf surface during wet and mild weather & germinate on the plant.
- Zoospores swim from infected plants or soil to new plants and infect them.
- This cycle can take as little as four days in favorable weather but typically takes 7-10 days. An entire field can be infected before the first symptoms appear.
- **Important: The disease prefers young, succulent growth; mature leaves are usually not affected. Which means a healthy plant is not effected.**

### CONTROLLING POWDERY MILDEW

Early identification and action are the best treatment for powdery mildew. Below are a few control measures to take when dealing with powdery mildew:

- Avoid overhead watering as an overly damp environment increases powdery mildew spore germination.
- Remove dead plant material and debris to reduce overwintering and cultivation sites. Powdery mildew spores are excellent survivors and will overwinter within plant tissue as well as in cracks and crevices that are hard to reach.
- Clean the growing environment (greenhouse, grow room, cold frame, etc.) and any tools you use thoroughly before planting/use.
- Remove affected foliage, if needed, and any already fallen leaves. Do not compost plant debris that has powdery mildew.

### POWDERY MILDEW TREATMENT

- **Natural Horticulture Oil can be used preventively for best results. It limit incidence of fungal diseases.**
- **Spray foliage with Natural Horticulture Oil on a regular spray schedule for continued control of powdery mildew issues.**
- **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.**
- **Spray with a hand-held or pressurized sprayer weekly until the powdery mildew is not visible, then continue to spray the plant on a 14-day schedule to prevent re-infestation.**
- **Natural Horticulture oil is for control of powdery mildew, rust, blackspot, botrytis, downy mildew and other diseases. Spraying with 1 liter per 200 liters of water every 7 to 14 days is recommended.**
- **Natural Horticulture Oil must be sprayed until the entire leaf is wet on top and on the underside of the leaf. Spores exist on both surfaces. The following are some organic control methods.**
- **There are two key ways to apply Natural Horticulture Oil to an infected plant: foliar spray and if the infestation is heavy drench / soak the plant.**

### HOW DOES NATURAL HORICULTURE OIL CONTROL MILDEW

- **Natural Horticulture Oil is neem based and is an effective fungicide and can work wonders against powdery mildew and other infections.**

- **Keep in mind success will depend on how bad the infection is and the Natural Horticulture Oil, the neem remedy you'll use. To Soak or Spray Neem Oil For Powdery Mildew.**
- **Powdery mildew is a surface fungus, meaning it won't infect below your plant's surface outside of a massive infection.**
- **As a result, you may wish to skip on a soil soak – unless there are scale, aphids, or other pests also affecting the plant.**
- **In such cases, The Natural Horticulture Oil drench / soil application 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.**
- **However, your main weapon will be a 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.**
- **Be warned that completely eliminating a fungal infection takes time, and the worse the infection, the more applications will be necessary.**

#### **PREVENTION IS THE BEST MEDICINE**

- Once you have eliminated a fungal infection, it's a good idea to give your plant a monthly neem soil drench treatment or a bath in the foliar spray every two weeks to prevent future problems.
- Always remember to use sprays at dawn or dusk if the plant is accessible to pollinators. It takes an hour after treatment before the plant will be safe for them to land on.
- Remember that fungal and pest issues can be highly contagious. Be sure to treat any plants that were in close proximity to an infected or infested plant to ensure no traces of the problem are left alive.
- Not all types of downy mildew are controllable. As mentioned, many strains develop resistance to fungicides. Even if the fungicide you put on your plants works, new infections can come on the wind, so you must be vigilant all season long.

#### **PREVENTIVE MEASURES**

- Fungal spores overwinter inside leaf buds and other plant debris. Wind, water and insects transmit the spores to other nearby plants.
- Prune or stake plants to improve air circulation. Make sure to disinfect your cutting tools after each cut.
- Remove diseased foliage from the plant and clean up fallen debris on the ground.
- Use a thick layer of mulch to cover the soil after you have raked and cleaned it well. Mulch will prevent the disease spores from splashing back up onto the leaves.
- **Wash foliage occasionally to disrupt the daily spore-releasing cycle with slightly more diluted Natural Horticulture Oil.**
- Water in the morning, so plants have a chance to dry during the day. Drip irrigation will help keep the foliage dry.
- **Use a slow-release Khuba Soil Conditioner on crops and avoid excess nitrogen. Soft, leafy, new growth is most susceptible.**
- Limit Water Buildup – Downy mildew zoospores spread by swimming in free water on plant surfaces. Consider watering in late afternoon/evening to limit moisture during the cool morning period.



- Powdery mildew (*Podosphaera xanthii* or *Erysiphe cichoracearum*) is one of a number of other fungal diseases often confused with downy mildew. Mixing them up is a problem because the treatments for each are different. Powdery mildew is a whitish growth that looks like a powder. The spots start as circles on the surface of the leaf and then grow to cover the whole leaf, including the veins. The leaves only turn yellow after they have had powdery mildew for a while. Powdery mildew can kill plants by blocking the chlorophyll in the leaves from sunlight. The plant starves to death as a result. **Under such conditions it is important to use Khuba Growth Promoter to nurse the health of the plant and regain its strength.**



THRIPS



### How To Treat & Control Thrips Organically

Members of the *Thysanoptera* order, the term 'thrips' includes more than 6,000 species. They can become serious pests indoors, outdoors and in greenhouse settings. In general, they are not host specific; however; species such as onion thrips and tobacco thrips feed on plants in specific families. Adult and larval stages of thrips feed on foliage and flowers causing extensive damage in a short time period under the right conditions. Damage typically shows up as stippling, silvering of the leaves, or discolored patches on the leaf surfaces, but can also be identified by the unique twisting they cause on new growth. Discarded pollen and grass can also be a major issue for orchid, violet and other ornamental growers as the buildup is unsightly and reduces flower longevity.

#### Thrips Control:

Monitoring & Prevention – Inspect plants early and often for signs of thrips activity or damage.

Hang **Blue** or **Yellow Sticky Traps** within the growing area to monitor pest populations. Blue traps are best when beneficial insects are already present.

General predators can keep thrips populations at low levels limiting damage – minute pirate bugs (*Orius insidiosus*), green lacewing and ladybugs.



Biological Controls – Use when thrips pressure is moderate or minimal for best results. Many insects control different life stages of thrips and there are numerous mycoinsecticides that also target them.

**Beneficial Nematodes (Sf)** are the easiest way to control thrips developing in the soil. They interrupt reproduction and reduce local populations leading to less adults and resulting damage.

*Neoseiulus cucumeris* are predatory mites used for thrips prevention, control and continued management. They feed on immature thrips and multiple species of mites. For best results, release before thrips become a serious issue as establishment can take 6-8 weeks.

*Stratiolaelaps scimitus* feed on a number of soil-dwelling pests including thrips prepupae and pupae.

Use of Khuba soil conditioner promotes beneficial nematodes.

Natural Horticulture Oil neem based is an effective knockdown spray and one of the best sprays for garden thrips control. It can be used prior to releasing beneficial insects and suppresses foliar diseases like powdery mildew.

**Azadirachtin** sprays work as feeding/growth inhibitors and can be combined with pyrethrins to increase impact and coverage. Use as a thrips control spray for severe infestations.

**Natural** horticulture Oil has shown great results controlling thrips and other soft-bodied insects, especially in greenhouses or indoor settings. It poses minimal risks to beneficial insects and is compatible with most other pesticides.

#### **FEW FRIENDLY BUGS:**

LADY BUGS can be introduced early in the growing season to help control mealy bugs.



GREEN LACEWINGS



There are many more.

- Early season releases of such friendly bugs help limit population growth and control mealy bugs in low numbers.
- Use of Natural Horticulture Oil so that the beneficial are not harmed.
- Use Natural Horticulture Oil to treat and repel mealybug infestations
- Natural Horticulture Oil helps in the fight against most plant pests, and mealybugs are no exception. It works in relatively the same way as insecticidal soap, except it has the added benefit of also being a fungicide.