



*“Repairing your damaged soils”*

**Name of Business:** KOFAR Kenya Ltd  
**Address:** P.O.BOX 337-00230, SAGANA.  
**Email:** [kofaltd@gmail.com](mailto:kofaltd@gmail.com)  
**Website :** [www.kofarltd.com](http://www.kofarltd.com)  
**Mobile:** +254 727 690370 or +254 722-912903  
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## **INTRODUCTION**

The primary thrust of KOFAR is to repair damaged soils and address soil fertility. We promote sustainable livelihoods and food security through provision of efficient and affordable organic and natural soil repair inputs; in addition to vigorously searching for better market prices for all farmers with whom we are doing business with. KOFAR intends to be a one-stop shop for organic farm inputs, organic produce, market research-cum-consultancy and an organic practices training centre among others. In this respect, KOFAR is aiming to cut across Africa as a leader in promoting sustainable agriculture, food security and a cleaner environment.

Our current activities include farmer group training, processing and marketing of compost/organic fertilizers, soil treatment inputs, organic soil conditioners. To enhance quality output and bumper harvests, we are making sure that our farmer partners are conversant with, and capable of using our range of organic and natural products by arming them with simplified user information.

### **A. SOIL TREATMENT INPUTS AND STIMULANTS**

#### **1. K-Tiba soil conditioner (Reclaim)**

K-Tiba (Reclaim) is an all-natural broad-spectrum soil stimulant, designed to eliminate the negative effects of continuous use of chemical inputs.

Reclaim helps the exploited and poisoned soil revert to their natural state. During its 25 years of use Reclaim has proved highly effective in reducing the damaging effects of especially, sodium in the root zone. Due to its composition of organic polymers, fermentation products and chelated copper, this product is acclaimed for promoting and sustaining a uniform distribution of soil moisture over the field on which it has been sprayed. Where it has been used, improved plant vigour and health have been widely noted. Its all-natural state stimulates soil micro organisms that are directly responsible for phosphorous and potassium release in the soil. In a nutshell, Reclaim is a:

- Soil detoxifier (poison remover) that will dramatically correct sodium levels to acceptable quantities, facilitate availability of phosphorous (root development) and nitrogen (foliage development) levels by up to 30%
- An all-natural soil inputs that will increase biological activity, help break up compacted soil layers activity and increase crop development above and below the soil surface.

#### **Application Modes**

Reclaim yields best results when applied on bare soil before sowing or planting. However, post-planting application (after crops emerge from the soil) is acceptable, but is not encouraged.

It can be applied through pivot irrigation, dripline irrigation, aerial irrigation (by plane) and ground spray. Well calibrated tractor-mounted boom sprayer are also used on large tracts of land; while smallholder farmers use back-pack or other sprayers. During spraying, farmers are asked to ensure an even ground cover.

It should be mixed with non-acid water, preferably untreated water.

## **Rates:**

Use 500ml Reclaim in 500lts of water to spray 1 acre of ploughed land.

This translates to 1.25lts Reclaim in 1500lts of water to cover 1 hectare.

For farmers with lesser but needy plots, calculate application rates at 1ml Reclaim in 1litre of water to cover 8m<sup>2</sup> area. Note that the less land size requires an unbelievably low amount of water. Under such circumstances, the ratio of Reclaim to water can stand at 1:2. This will not alter the effect at all.

## **NOTE:**

Mechanical farms receive better Reclaim results when the product has been applied after harrowing, just before planting; and best when the soil is not too dry. Spray the product as close to the soil as possible on calm days, early morning or late afternoon.

## **2. NANO Ag**

Nano Ag is the ultimate superior outcome of Carbon Answer, Bio-n-Liven and OMPE (Organic Marine Plant Extract) powder. The three have been combined scientifically to bring out the power of each one of them. Using the “Nano technology”, (Nano-metre is one billionth of a metre) involving complex formulas and processes, the producer of this input ensured that it is the ideal answer to a myriad of problems associated with soil life and status.

Nano Ag thus combines the properties necessary for cleaning up the waste in the soil, bringing the soil back to vibrant life, providing both macro (major) elements (NPK, Calcium, Magnesium, Sulphur) and micro (lesser) nutrients (manganese, Carbon, Iron, Zinc etc) in addition to plant growth hormones (Cibberelins, cytokins) and complex essential sugars (Cellulose, Chitins, Glycogen and starch. Amino acids are also present with their key elements of Carbon hydrogen, Oxygen and Nitrogen. Broken down by enzymes produced by micro-organisms (bacteria, fungi, algae and actinomycetes), these substances contribute to the energy, nutrition and strength of plants. That is the ultimate answer to a sick soil - the Nano Answer.

### **Carbon Answer**

This is a soil improve that reverses the negative impact of excess application of previous in organic chemical treatments. Its inherent electrical energy (25%Electrolyte Answer) helps to push soil particles of act and provide greater water penetration and retention. This high energy, all organic nutrient source provides immediate energy to microbial life so that they can effectively clean in the waste and produce humus, hence improving the top soil.

### **Bio-n-liven**

It's not very different from Carbon Answer. This product stimulates microbial activity and multiplication to enhance breakdown of both organic and inorganic matter, creating precious humus in odourless atmosphere. That is why B-n-L is especially important and helpful in the treatment of waste ponds, livestock confinement facilities, lagoons, abattoir waste tanks, municipal waste facilities and composting sites.

Due to its organic nature, chlorinated water should never be used for mixing with B-n-L as it will have negative effect on the enzymes and soil micro-organisms (soil biota). Equally, antibiotics and all inorganic forms of pestilence management products should never be used together with B-n-L.

## Application

While Carbon Answer and Bio-n-Liven used to be available in liquid form, Nano Answer exists in a dehydrate concentrate in sachet form (to save on handling and shipping weight and to extend shelf life).

All types of atomizer sprayers (aerial, pivot, boom, knapsack, hand) can be used to dispense either of the three, as provided for in the "RATES".

1sachet of Nano Ag is used to treat 1 acre (or 3sachets per Hectare). Dissolve each sachet with 4litres of water in an open container and leave for 48hrs. The water must be non-chlorinated water. On the day of spraying dilute with more water (500litres) to cover the area.

## B. SEED TREATMENT

### 1. SEED BOOST

Sometimes referred to simply as Seed Treatment this organic product is extremely essential for organic and conventional farmers in that it provides all types of seeds with a 'kick off' towards a reduced germination period and an even germination uniformity

Seedboost, which is all –natural, contains nutrients and compounds that enhance seed germination and seedling vigour. When correct rates are used deeper, more extensive rooting is observed. This is due to an increased nutrients uptake. Vigorous, studies, seedlings, with a pronounced strong collar (area between root-base and stem) are also observed. Its blend of germination extracts, organic acids, plant extracts and surfactants (leaf surface nutrient source) enhance increased soil microorganism activity, creating an environment for the greatest possible yield potential. This is because the roots develop more bio-mass enabling the plant to absorb nutrients more efficiently and in greater quantities. This gives the crop plant the ability to withstand drought stress.

### Application modes

Generally, SeedBoost is used as a 'pre-treat'(seed treatment before planting / sowing) on a wide range of dry seed, tuberous planting materials (Irish potatoes, cut or whole) and on pre-transplants (young seedlings uprooted from nursery and about to be transplanted onto a permanent seedbed). Cutting –propagation materials for a wide range of creepers, climbers, shrubs, herbs, flowers and a number of tree crops –have shown very positive reaction when pre –treated with seedboost prior to propagation (planting).

### Rates

For best results, the farmer must strive to know the various seed rates of the crops he/she is growing. Seed rates simply refer to the quantity of seeds or other preparation materials per given area, usually an acre or hectare. This is because seedboost manifests its potential better when applied on the planting material.

The standard treatment is to spray 45kg seed with 150ml of seedboost, dissolved in 0.5lts of water (500ml). To accomplish this, farmers are advised to spread the planting material or seed. This should be done in shade to prevent ultra violet rays from the sun destroying the 'activating' micro-organisms. An hour or so later, seeds can be planted through the seed hopper or other means. Under no circumstance should seeds be interfered

with or over-handled after treatment. Plant or sow the same day seeds are treated.

The second and much easier method of seedboost application, especially for lesser seeds as those of most vegetables is to 'furrow-spray' it. That is spray on the planted seeds immediately after planting on the furrows (the sunken row for purposes of seed propagation). Such spraying must be done before the seeds are covered. Use 500ml Seedboost, tank-mixed in 500litres of water and use a tractor-drawn boom spray to cover 1acre (1.2lts per Ha in 1200lts water).

Equally, farmers have successfully pre-sprayed wheat fields before sowing and the results have been just as good. Horticultural farmers have received better results using the drip line. It is important to adhere to the recommended rates.

Cuttings and budding/grafting material can be dipped into Seedboost mixed with water at 180ml to 500ml (0.5Lt) water. However, sufficient water can be used for full coverage of seeds or planting material.

## **C. FOLIA TREATMENT INPUTS:**

### **1.1 TAWI-PLUS (MicroPlus)**

One of our most diversely used products, Microplus is a foliar treatment, designed to increase carbohydrate levels with a plant, thus raising the crop growth levels and setting a high production status to treated crops. It contains a combination of selected strains of kelp (a high nutrient sea weed found in temperate oceans) growth stimulants and specific rations of vital trace elements which go a long way to improve plant health, increase efficiency of foliar nutrient and reduce plant stress.

This product's greatest value lies in its rapid absorption and utilization by plant issue, thus improving the whole crop by making it more resistant to pests and diseases. In a nutshell, the main benefits of Microplus, among others, include;

- Enhanced crop quality
- Dramatic increase in yields
- Faster crop recovery from stress

### **Application Methods;**

Microplus can be sprayed onto crops using aeroplanes, pivot irrigation, tractor-drawn boom sprayers, driplines ; or knapsack and hand sprayers, The most important factor to consider when using any of the above methods is foliage coverage, As for all other products, the farmer must choose windless day or early morning late afternoon spray. Spray a few hours before rains is not recommended as this will interfere with the quality intended for the crops, as this product is not a soil-treatment agent.

### **Rates**

Agricultural field crops will generally require foliar applications of 450ml-500ml per acre ; tank mixed with 100lts to 500lts of water as the(solvent) need may be. (This is 1,125ml-1250ml) per hectare in a similar quality of water in litres.

Large scale farmers have used 600ml in 600lts water to spray 0.5ha as most tractor –drawn boom sprayers are equipped with 600lts drums.

Greenhouse and Nurseries will require 570-600ml mp in50lts of water, applied through the drip line .Note

well that when the mixture is over before covering the intended area, the farmer uses the ratio 1:75 to mix the amount required to cover the remaining area.

Golf field and grassed lawns will require 60ml mixed with 5lts of water to cover 930m, meaning that the operator can dilute down the 5lts mixture (actually 560lts ;) with adequate water to spray a lawn or golf course area of 930m.

There are many other organic and all –natural product that are not included in this user information booklet. Updates will be made as often as possible, upon their arrival, testing and compliance with own agriculture inputs regulations.

## **2. GREENHOUSE BLEND (GB)**

As the name implies, this organic product was formulated for use in greenhouses and assorted crop structures. It is a blend of essential micro-nutrients, vitamins, hormones, rooting stimulants and a wetting agent. It is designed to stimulate faster germination, healthier seedling vigour and rapid crop development. Like its open-air compariot(Seed Boost), its ingredients enhance soil micro organism activity to allow rapid seed germination, creating an atmosphere that is a precursor (pace setter) for the greatest possible yield potential, under housed crop conditions. This product combines the triple quality for its excellent results on seeds, soil and crops.

When using the Greenhouse Blend, nursery many have noticed an increase in germination and rapid root, plant and flower development when compared to ‘control’ crops under the same conditions. Crops treated with this product have come up stronger and have repeatedly withstood transplanting with far less damage or death.

### Application Mode and Rates

This organic product must be used on the day it is mixed. Generally Greenhouse Blend is misted onto seed when they are in their planting holes or furrows. Mix 1ml Greenhouse Blend in 10lts of water (or more depending on the dryness or wetness of the tilth) to cover 100m<sup>2</sup> (Ratio of 1:100).

The second application should be on the soil before the seeds come up with the final application (misting) being onto the leaves, twice per month, during the growing period.

In countries where hydroponic (growing crops suspended in water instead of soil) is practiced, Greenhouse Blend is diluted with clean water at the ratio of 1:100, for example 20lts GB in a 2000lt circulation tank within one month.

## **D. PROCESSED COMPOST/ORGANIC POWDER FERTILIZERS.**

### **1. ROTUBA ORGANIC FERTILIZER**

This dark brown organic fertilizer is mid powdery in texture, that is neither powdery nor granular, and is 100% organic matters, fortified with vital micro-nutrients. During its development, selected plants, macro and micro-elements (such as magnesium, organic carbon, sulphur, iodine, iron Boron, silicon, zinc and manganese ) were up scaled to required crop nutrition levels using a patented biodynamic formula.

Rotuba continues to be fortified in order to meet crop-specific nutrition demands as it is clear that while some crops are light feeders, others are heavy feeders: while some require a bit more of specific trace elements, others may not even require it.



To establish itself as a potent organic soil food and conditioner, Rotuba has gone through rigorous field trials and laboratory analysis with the established government bodies – KEPHIS, KARI, KEBS, KIRDI and some universities-the result of which a definite user protocol was established.

This product is user friendly and affordable. It's available in 5kgs, 10kgs, 25kgs and 50kgs well sealed bags that ensure that the product inside cannot be adulterated or destroyed by external factors such as water.

An all encompassing factor of Rotuba is that it is used not only for dry planting, but also as a top dress, saving the farmer the hassles associated with seasonal shortages of conventional top dress inputs.

## Application Method

Rotuba is a very easy product to apply. It is recommended that it is well worked into the soil for best results. There are several approaches.

- For raised, sunken or flat nurseries intended for transplant vegetables, the farmer should add 10kgs of Rotuba on a 5 square metre patch and work it into the tilth with a fork jembe. Mark out your nursery site with sticks and make out sowing furrows. Add adequate water using conventional water can after drilling your seeds into the furrows. Follow the other nursery management routines as is necessary. This rate is especially good for Brassicas, Solanaceae, Liliaceae (onion family).
- Root vegetables (carrots, beets, etc) are low feeders and in most cases are not transferable; so there is a permanent seedbed. Use 5kg of Rotuba for 5m<sup>2</sup> seedbed.
- Sleeved or potted vegetables and herbs will a 1:1 ratio, thoroughly mixed with sub-soil before filling in their respective containers. This is because while sub-soil is very low in nutrients, it is usually free of disease and pest spores and eggs.
- Cuttings of any specific crop may not require too much organic fertilizer before they develop roots. It is recommended that Rotuba be added after transferring them to their permanent seedbeds. Instead, farmers are advised to dress them with Seedboost.
- Commercial cereals like wheat & barley and others which are mechanically sown will require that the seed and fertilizer hoppers are calibrated at the ratio of 55 to 35 (seed to Rotuba output onto the drills). Equally, Rotuba could be harrowed into the fine tilth before the seeds are putting. In this case, the farmer should calculate to use 100kg per acre (250kg/ha). Spread evenly and harrow. This should be done before the onset of rains.
- For hand planting, where seeds are put into holes and furrows, the standard routine is to incorporate 2 bottle-tops (25gm) per hole; or drill a handful of Rotuba along a metre length of furrow. This is especially the case with maize, beans, curcubits (melons, pumpkins and squash) among others.
- For growing fruit trees, bananas, passion fruit, ornamental trees and herbs; one is advised to use from 2-4 handfuls (0.5-1kg) through dollop displacement (stem ringing at 30cm from stem base). This will however depend on the number of stems at the cluster, where each sucker (say in bananas) may require its quantity.
- For tea Rotuba will need to be top-dressed the same way conventional fertilizers are done.

## **APPLICATION RATES**

<b>CROP</b>	<b>RATES</b>	<b>APPLICATION METHOD</b>
Fruit Trees, Coffee, Pineapple	250kg-350kg/Acre	2-4 Handfuls (250g-400g) at planting and beginning of rains.
All cereals, Maize, Rice, Solanaceae Brassicas & Mixed stands	50kg-150kg/Acre	Drill or apply at planting hole. Top dress along rows at start rains.
Legumes, Curcubits & Carrots	100kg-150kg/Acre	Apply 5-10gm at planting hole.
Potatoes/Cabbages	200kg-250kg/Acre	Apply in furrow at planting. Use seed and fertilizer hoppers. Calibrate well.
Tea	300kg-400kg/Acre	2 Handfuls at planting and 4handfuls spread well under the canopy during topdressing. Apply twice per year.
Flowers	150kg-200kg/Acre	Drill along rows, broadcast on beds or apply at stem base.
Bananas	150kg-200kg/Acre	2 Handfuls per hole at planting; 4 Handfuls per plant when crop is 4months & above. Apply twice per year.
Sugarcane/Nappier grass	150kg-250kg/Acre	Apply in furrow or planting hole. Broadcast as topdressing from 4months on.
Passion Fruit	100kg-150kg/Acre	A Handful per planting hole. 2 Handfuls as top-dressing through ringing.
Cotton	50kg-100kg/Acre	Apply 5gm per planting hole. Top dress by Broadcast.
Tree Seedlings	100kg-150kg/Acre	A Handful per planting hole. Top dress with 2-4 handfuls as they grow, twice per year.



## **ORGANIC LIVESTOCK INPUT**

### **Livestock Answer**

Currently, this is the only organic product in our domain which addresses livestock issues. Livestock Answer was formulated in the USA and tasted for many years on all classes of livestock; with very positive results.

This probiotic (nature embracing) supplement is designed specifically to increase the rate of nutrients absorption in livestock and pets; and provides the essential trace minerals necessary in keeping the digestive system in a great working condition.

It's multiple, balanced enzymes nutrient supremacy is formulated as a dry feed additive for all livestock and pets. Designed to break down eaten feed faster; and make more nutrients available for rapid absorption. It also contains a balanced formular of enzymes and water-soluble, trace mineral electrolytes, which are essential for modern day feeding routines.

### **Application**

This supplement should be thoroughly mixed with dry feed as per given rates.

### **Rates**

Add 1,230gm of Livestock Answer to 907.2kg dry feed.

To lessen this, mix thoroughly 100gm of Livestock Answer with 1 full 70kg feedbag (standard for Kenya). All animals use the same rates.