

Pure



KNF Recipe Book Core Solutions & Formulas for Application



by drake@pureknf.org
Get help at knfsupport.com
2020, October 10 edition





E Hō Mai

**E hō mai ka 'ike
mai luna mai e**

**O nā mea huna
no'eau o nā mele e**

**E hō mai, e hō mai,
e hō mai Ea**



Composed by: Edith Kekuhikuhipu'uoneo'naalikiokohala Kanāka'ole

Kumu hula master and Hawaiian cultural and language expert, Edith K. Kanāka'ole (affectionately known as Aunty Edith), composed this *oli* (chant) for her hula troupe, *Hālau O Kekuhi*. The chant was originally performed by students at the beginning of class to request knowledge and wisdom from the ancestral deities to accomplish the task at hand.

Today, this *oli* is commonly used at the start of an event or small gathering to focus a group's energies and ultimately carry out the *kuleana* (responsibility) they have undertaken. It is recommended that *haumana* (students) use this chant to help them seek knowledge and clear their minds of any negativity.

This book is dedicated to the Ocean.

It is intended as a sweet and short recipe book for those new and old to Korean Natural Farming. A way to bring honor, respect and dignity to the many that need credit. Most explicitly it is important to recognize Master Cho Han-Kyu and Dr. Hoon Park for their hidden contributions to this masterpiece.

These teachings have changed my life and become an integral part of my being. May your reading inspire you to become a well informed action oriented caretaker of all life from your inner guts to the outer cosmos. All life depends upon your actions and choices.

May this translation exalt natural farming.

Long live the natural farmer!



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www.pureknf.org



About the Author

Drake has been studying natural farming officially since his introduction by Ginger John, Mike DuPonte and Dr Hoon Park in 2007. His dad has always inspired him in agriculture and took him on his first trip in 2009 to see Master Cho in Korea. Since then he sees Korean Natural Farming as a way of life.

Drake runs the KnfFarm.com in Hawaii with Suze where they offer trainings, certification courses, and practical hands on apprenticeships from time to time. During the summer he hosts KnfConference.com where folks can gather from around the area to meet local experts and exchange information. Drake's YouTube channel KnfVideo.com is fairly popular and has a lot of early KNF footage, full lectures and farm tours with Master Cho Han-Kyu. Drake also hosts a podcast at microbialsecret.org

Pure KNF Foundation

501c3 Tax Deductible Education Nonprofit



knfSupport.com
knfCertification.org

Teaching Standards
Legal Support
Access to Learning Material

Mission and Purpose of PureKNF -

- I. Heal the soil, heal the plants, heal the animals, heal the people, heal the oceans
- II. Mimic the philosophy of IMO in a worldwide structure
 - A. Train and educate global leadership to spread IMO
 - B. Connect the network to share resources and advances
 - C. Unify through common practices and branding
 - D. Promote diversity by empowering local leadership
- III. Bring animal farming back into urban ecosystems
- IV. Promulgate and optimize solution to stabilize climate.
- V. Liberate nature from usurious systems.

The Pure KNF Foundation was incorporated to create stability and leadership within the Korean Natural Farming community. It acts as a hub to provide a network for those interested in KNF to get certified and gain access to learning material as well as a network of folks practicing worldwide. Connect with the Pure KNF Foundation for mentorship, manufacturing KNF solutions, and supporting practitioners in the field.

The Legacy and Lineage of KNF

It has been my struggle to sufficiently translate Korean Natural Farming into the western mindset. It has become more than words, these are whole concepts that need to be explained that either make natural farming intuitive or a load of jargon. Much of what I have learned and taught has been honed by my experience in the field, but here is my best attempt to honor what has become a long lineage of masters...

Above all, the source is the Source. Nameless and ineffable, it is available for direct connection to anyone to try to describe. Science is the study of Nature, and everything we know is from our limited senses to observe and optimize the grand systems at work. There are more than just the physical senses though, and this is where the Spirit of Natural farming comes in. Each person has a direct connection to this Nature and may cultivate a divine inner connection of true knowing in their heart which supersedes all written text of any author. This is not to be confused with amateur overconfidence, but is instead cultured when one demonstrates balance with nature in all aspects of their life at all scales through personal practice and disciplined integrity.

There are some great folks out there though throughout history and contemporary that have made monumental strides in codifying and understanding the system to be used in a reliable way for others to copy. This has been immensely helpful for us, and here is an attempt to recognize only a few, when in reality it is like the microbes, it's not about one hero, but the collective love that surrounds a healthy community.



Master Cho Han-Kyu

He is the main inspiration for the recipes in this book. He held and refined them at a time when almost nobody cared. He set the foundation for Pure KNF to emerge and carry on his legacy.



Ginger John



Dr. Hoon Park



Chang Chong-Suk

Ginger John, Dr. Park, and Kim Chang were instrumental in anchoring the natural farming movement in Hawaii. There were many others involved but their contributions to the teachings are immeasurable.



Gil Carandang

Gil brought low cost natural farming to Hawaii in 2009 and spawned drake's natural farming club



Cho Young-San



Rei Yoon

Young-san and Rei have innovated on ultra low cost knf and pest'a'side management



Dr. Elaine Ingham

Elaine brought the scientific lens of understanding to properly study natural farming in 2012



Masunobu Fukuoka



Rudolph Steiner

One Straw Revolution and *Biodynamic Agriculture* are landmark books!

9 Vital Solutions of Master Cho For Soil, Plants, Animals and People



1. **Microbes (IMO)** Indigenous Micro Organisms

Leaders. Diverse native microbes trained in teamwork to teach the soil how to come into balance and use natural resources around to support vibrant growth. Healthy living soil microbes form the foundation of Korean Natural Farming!



2. **Police (LAB)** Lactic Acid Bacteria

Emergency Workers. Microbes that act as the police or National Guard to restore balance and maintain peace after a disturbance or emergence to the microbes.



3. **Food (FPJ)** Fermented Plant Juice

Food. Pure essence of a plant containing complete nutrient profile including complex hormones and enzymes in a plant available form. Mimics plant exudates.



4. **Cleanser (BRV)** Brown Rice Vinegar

Cleanser. Vinegar made from grain or ripe fruits act to flip the polarity of a cell upon metabolization going from acidic to alkaline thus enabling the cell to clean itself and be open for the absorption of new foods. Many other exciting functions!



5. **Medicine (OHN)** Oriental Herbal Nutrient

Medicine. Common theme is traditional oriental herbs aiding in digestion and reproduction first fermented then tinctured. Gives plants pathogenic immunity.



6. **Structure (WCP)** Water Soluble Phosphate

Structure. Used regularly, bones provides strong roots and structure making plants long and strong. Helps to harden a plant from pests and recover from being obese.



7. **Fuel (FAA)** Fish Amino Acid

Fuel. Used sparingly, meat that makes plants luscious, curvy and filled out. It contains amino acids which help to rapidly produce DNA to grow leafy material.



8. **Reproduction (WCA)** Water Soluble Calcium

Reproduction. Calcium transfers accumulated carbohydrates into sugars and aids in the formation of fruits and seeds making fruits sweeter and skins more flexible.



9. **Minerals (SEA)** Diluted Seawater

Minerals. Every element is present in the sea and by diluting it to the same salinity as your blood, they can be absorbed by plants to fill trace mineral requirements and improve soil quality through flocculation.

7 Growth Formulas of Master Cho

Right Nutrients, Right Time, Right Amount = Success



Make Calculation
Easy With the
KNF Solutions App





7 Growth Formulas of Master Cho



Right Nutrients, Right Time, Right Amount = Success



Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	-	-	-	-
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Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	-	Police 1:1000 4mL	Minerals 1:20 190mL	-
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Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	Fuel 1:1000 4mL	-	Minerals 1:25 150mL	-
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Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	Fuel 1:1000 4mL	Police 1:1000 4mL	-	-
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Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	Fuel 1:3000 1mL	Police 1:3000 1mL	Minerals 1:30 125mL	-
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Food 1:500 8mL	Cleanser 1:500 8mL	Medicine 1:1000 4mL	Structure 1:1000 4mL	Fuel 1:3000 1mL	-	Minerals 1:25 150mL	Reproduction 1:1000 4mL
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Food 1:500 8mL	-	Medicine 1:1000 4mL	-	-	-	Minerals 1:20 190mL	Reproduction 1:1000 4mL
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*mL measurements are approximate for 1 Gallon. Use calculator app for accurate measurements



Maintenance Formula for General Maintenance

Simplify Life: One Jar for Common KNF Applications

Instead of carrying around multiple jars to make the most common mixes, we have found the common denominator of all mixes to be Food, Cleanser, Medicine and Structure, so why not premix a jar containing these 4 solutions? With maintenance solution instead of having to get out 4 jars each time, this one jar is used and the recipe is adjusted appropriately. This is exactly how this formula came about.

The sacrifice is less precision for more convenience and over all ease of applying natural farming solutions. There are also concerns about premixing the maintenance solution to prematurely as each of the solutions will react with each other, so as a matter of purpose, we mix only about one month's amount at a time.



Make Maintenance Formula

Only store for 3 months

Recipe: Mix 4 KNF solutions in one jar

Example: To make 1/2 gallon of Maintenance Solution - Add 630mL Food, 630mL Cleanser, 315mL Medicine & 315mL Structure. This is now 1/2 gal of Maintenance Formula ready for storage and later use.

Solution	Ratio	1/2 Gallon	1 Liter
Food	2 parts	630mL	332mL
Cleanser	2 parts	630mL	332mL
Medicine	1 part	315mL	166mL
Structure	1part	315mL	166mL

Use Maintenance Formula

To Use: Add 25mL for every Gallon of water

Example 1: To make 5 gallons of water ready for application to plants add 125mL of Maintenance Formula to 5 gallons of water.

Example 2: To make 40 gallons add 1 liter of Maintenance Solution

To Use	Add
1 Gallon	25mL
5 Gallons	125mL
25 Gallons	625mL
40 Gallons	1 Liter

Why use it?

Use alone for the general maintenance of plants, or as the basis of the other sprays

When?

Typically given 1x/week



Recipe for Establishing Soil Foundation

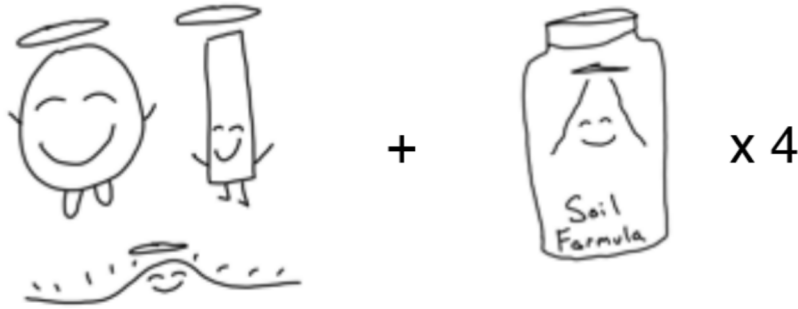
Step 1

Spread Microbes ~3lb/100sqft (1200lb/acre)

Step 2

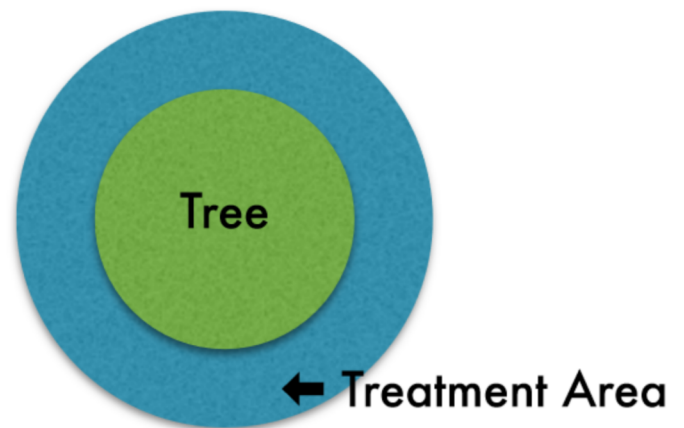
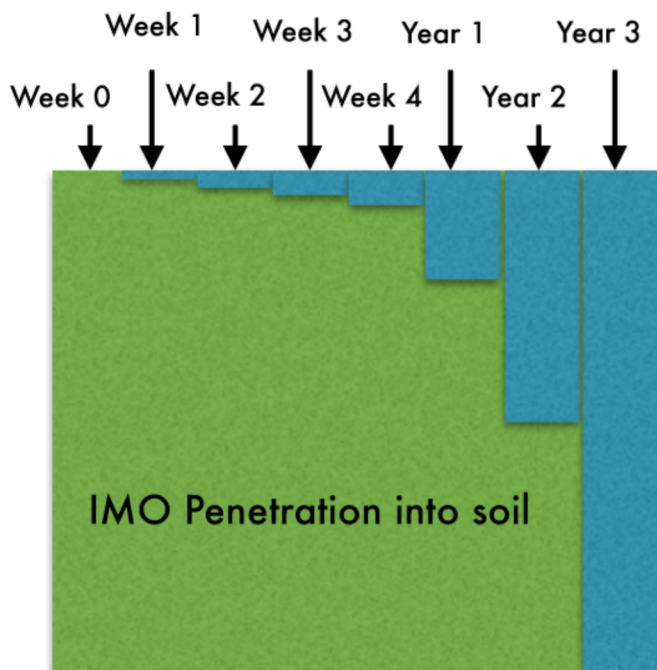
Apply Soil Formula 5gal/100sqft (2000gal/acre)

Repeat step 2 every 7 days for 2-4 weeks before sowing



- The goal is to build Soil Fungal Connections
- Do not bury or otherwise suffocate knfMicrobes
- Do not till after creating soil foundation
- Ideally spread in evening time < 2 hours before sunset
- In Garden bed
 - spread homogeneously over surface
- For orchard trees
 - make 2ft wide ring around drip line

- Rebuild soil foundation after any kind of serious disturbance
- Should be applied before sowing a crop
- With good care, should not be necessary after 3rd year
- With okay care, should not be necessary after 7 years
- Can build > 3 inches of topsoil a year



Natural Farming Growth Formulas



The following chart is an ideal representation of a 12 week crop showing the Korean Natural Farming Growth Cycle as taught by Master Cho. In practice this chart must be adjusted on a crop by crop basis to match the unique characteristics provided by each plant, however many of these archetypical characteristics will appear in every life form



*The slight yellowing of leaves due to the puberty phase can be adapted for each crop

1. Food Changes As Plants Mature

Childhood - First 1/3 of life - Growth tips

Teenager - Between 1/3 and 2/3 of life - Flowers / Unripe Fruits

Pregnancy - Last 1/3 of life - Ripe fruits

2. Chubby Skinny Balance

In general natural farming oscillates between “chubby” and “skinny” based on anticipated body types. A child is chubby, toddlers are skinny, teens are chubby, 20s are skinny, etc.



9 Core Solutions of Master Cho Han-Kyu

KNF Food (FPJ) Fermented Plant Juice



Gather one species of plant material. Multiple species confuse microbes during fermentation. Do not wash off plant material, shake off any excess dirt. If you are interested in ample growth hormones gather only the growing tips and do this at dawn before the morning dew evaporates.

Mix as if in a cement mixer with 1/3-1/2 the weight of the plant material of sugar. More sugar is needed if the material is sweeter and less if it is not sweet. Add sugar and stir to create enough osmotic pressure which is visible as the plants start to look like they are wilting/cooking, but not too much sugar to retard fermentation.

Pack tightly 2/3 into an appropriate vessel such as a jar or 5-35 gallon bucket.

Allow to ferment around room temperature for 3-4 days or longer if the temperature is cooler. Smell will change from fresh plant material to sweeter "slight alcohol smell" or mold will develop on the surface when fermentation is complete.

Collect the liquid and supersaturate for preservation by pouring off the liquid then adding sugar and stirring until a slight ring develops on the bottom of sugar settling out from over saturation.

Store in a cool place out of sunlight similar to wine or liquor for up to one year.

Which plants to choose?

Want vegetative growth? Make food from tips of something that grows very vigorously. *Banana suckers, bamboo suckers*

Want to support the flowering stage? Make food from flowers or unripe fruits. *Banana flowers, unripe fallen fruits*

Want a food for the fruiting stage? Make food from one or three types of fruit with the same recipe but increase the amount of sugar to equal weight because fruits are so sweet.

Want something that is general purpose? Make food from a dynamic accumulator. *Comfrey, weeds native in your area*

Want to concentrate certain nutrients such as silica? Choose a plant that is high in that nutrient, such as horsetail for silica, then ferment that and use that extract!

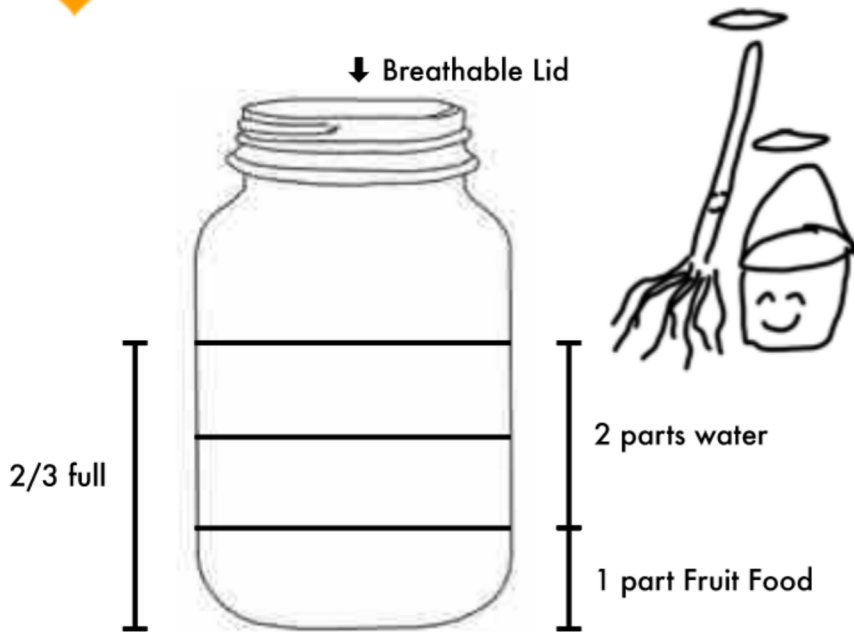
Want to boost one particular plant? Make food from the same kind of plant!



Food is the king of all medicine. It perfectly mimics plant exudates. By combining multiple foods together the biology thinks there is a polyculture growing above it and avoid the problem of monoculture sickness.



Cleanser (BRV) Brown Rice Vinegar



- Acetic acid sterilizes and restrains bacterial diseases
- Supports liver cells in purifying functions
- Moves cells into an alkali state
 - Better calcium absorption
 - Ready to receive foods
- Helps plants form wax layer
 - Thicker leaves
 - Faster foliation
 - More resistant to pests and disease
- Improves flexibility of plant

- Mix 1 part of Food with 2 parts of water. (ie 1L Food with 2L water)
- Ferment with breathable lid
- Keep in cool place out of direct sunlight
- Takes 3-6 months
- Speed up the process by adding a splash of living vinegar or adding a 'mother scoby' from an existing vinegar.
- Finished vinegar has pH of < 2.4

Functions of Cleanser

Cleanser in low concentrations facilitates vegetative growth and affects the initial growth of leaves greatly.

If Cleanser is applied on the leaves, it helps them form the wax layer, which creates thicker leaves, fastens foliation, and increases resistance to diseases and insects.

Cleanser improves the flexibility of the tree and increases absorption ability when natural farming materials are sprayed.

Due to the activity of the acetic acid bacteria, Cleanser has an ability to sterilize and restrain bacterial growth.

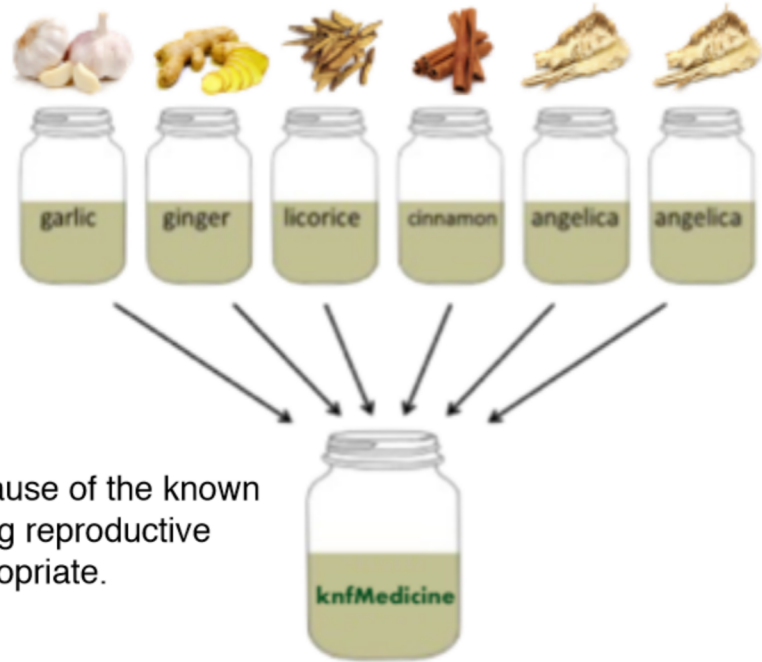
Because it is used with water-soluble calcium, Cleanser maximizes the effect of calcium.

Cleanser of high concentration accelerates reproductive growth.

KNF **Medicine** (OHN) Oriental Herbal Nutrient

A medicinal fermented tincture composed of a blend of 5 traditional Oriental Herbal Nutrients:

- Garlic x 1
- Ginger x 1
- Licorice x 1
- Cinnamon x 1
- Angelica x 2



Reasoning:

This combination was traditionally chosen because of the known effectiveness in easing digestion and enhancing reproductive processes. Other herbs may be added as appropriate.

Materials:

- ~200g of dried herbs each or 1kg of fresh herbs
- 6 1/2 gallon glass jars
- 9 lb brown sugar
- 5 gallons of >35% alcohol

Process of Preparation

- I. Rehydration (skip if material is not dehydrated)
 - A. Rehydrate dry materials by covering with beer for 12-48 hours
- II. Fermentation
 - A. Ferment with Brown Sugar for 3 days similar to knfFood recipe
- III. Tincturing
 - A. Add alcohol, stir once daily for 14 days to tincture.
- IV. Re-tincturing (can be repeated 5x)
 - A. Pour off liquid into container separated by herb type
 - B. Reseed by refilling liquid to 1/3 with pour off
 - C. Refill to brim with new alcohol
- V. Combination
 - A. Combine all herbs in the specified ratio before use

Keys for Success:

- Ferment and tincture only one herb per container
- Keep herbs separate in storage
- Only combine one month before usage
- Use 35% or greater alcohol
- Keep a airtight seal once alcohol has been added
- The longer tincture is stored the more potent they become





Medicine (OHN) Oriental Herbal Nutrient

Pour-off Procedure



Tinctured for 2 weeks. Stirred daily



- 1 large vessel for each herb. keep separate.
- 100% of liquid is poured off into large vessel > 2 gallons
- all pour offs go into this vessel and are mixed thoroughly
- filter to keep material in small vessel



- Tincturing vessel is refilled 1/3 from big vessel
- do not repeat this step the last time!



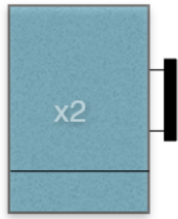
- tincturing vessel is filled to brim with fresh 30% or greater alcohol
- return to top



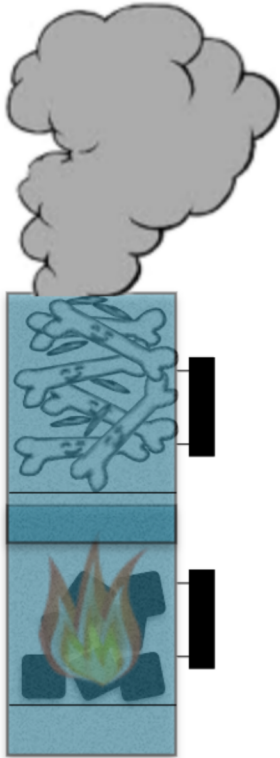
- contents of large vessels are stored individually
- when wanting to make ohn combine
 - garlic 1
 - ginger 1
 - licorice 1
 - cinnamon 1
 - angelica 2



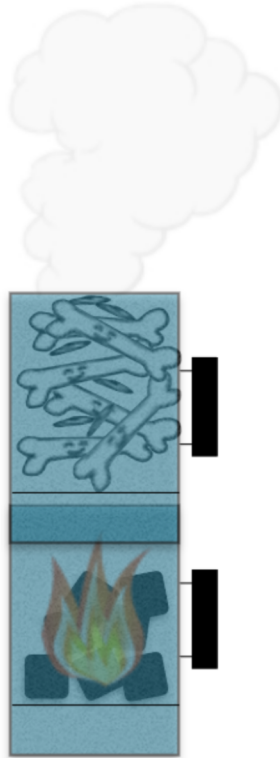
Structure (WCP) Soluble Calcium Phosphate



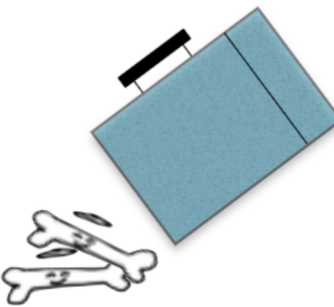
Used in the Maintenance Formula or solo by diluting 1:1000 in typical use cases for flowering, growing roots, and supporting the structure of the plant



Char the bones.
Will have foul bluish smoke rising.



When smoke becomes clear, the bones are charred



Remove from heat and extinguish bones



Crush bones and add vinegar at 10:1 ratio by weight



Extract Liquid. Discard bones

- Boil the fat off of fresh bones or start with bones that have been weathered in the sun for a few weeks
- Char bones of terrestrial or aquatic animals (not birds, they are too frail and light!) to a blackened state. White on the outside is fine **if** when crushed they are fully black inside. Brown is underdone.
- Mix 1 part bones with 10 parts vinegar by weight
- Stir & agitate daily to dissolve for 10 days or until bubbles stop rising when shaken.
- **When done there should be no vinegar taste**

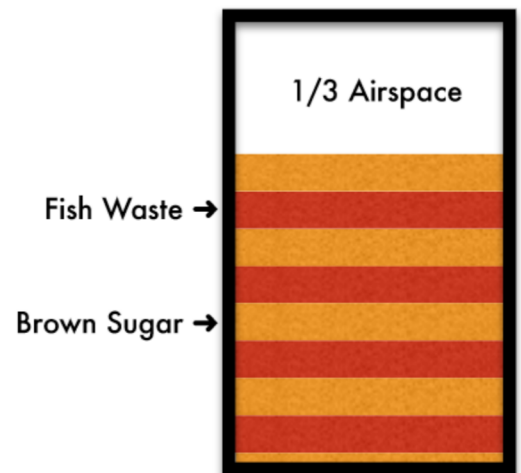
KNF Fuel (FAA) Fish Amino Acid

Recipe:

5 gallon bucket with a lid
25# of brown sugar
25# of fish waste. heads. guts. spines.
a rock that fits on top.



- Start with a 1/2 inch layer of brown sugar
- Alternatively layer 3 inch layers of fish and sugar
- Fill to 2/3 of container
- Cap with a layer of sugar
- Check next 3 days, if smell, add more sugar
- Ferment for 3 months
- Use liquid as necessary
- Will continue to improve for 3 years



Any animal can be used to get Amino Acids with almost an identical process. Fish are traditionally used because they add fats and oils, specifically omega-3 fatty acids, which are vital for plants and farming.

The introduction of imo into this process will digest those oils. Adding imo can be beneficial because it can reduce the odor, but usually adding more sugar or submerging the fish is a better practice.

It is mostly used in the juvenile stage when plants can't fully manufacture their own amino acids. It is used super dilute all the time to "keep the fire burning". Over use in the later stage can cause obesity.



Reproduction (WCA) Water Soluble Calcium



3 Dozen Eggshells
Pan and outdoor cooktop
1700mL of Vinegar
1/2 gallon mason jar
wooden stirring spatula



- Remove membrane immediately after cracking egg
- Crush eggshells to ~3mm pieces

Step 1: Toast the material on a heat just lower than smoking

- Cook eggshells on a heat just lower than smoking for 15-20 minutes
- Eggshells will turn slightly brown (like a perfectly roasted marshmallow) when done
- Try not to burn the eggshells black as this reduces calcium content
- Winnow to remove membranes

Step 2: Dissolve the shells in vinegar

- **Mix 1 part eggshells with 10 parts vinegar by weight**
- **Step 2: Add the eggshells to vinegar**
- Dissolve for 7 days
- Stir & agitate daily

Step 3: Filter liquid and discard solids after vinegar taste is absent

- Separate and store liquid with airtight lid





Minerals Diluted Seawater (SEA)

Seawater is naturally ~ 3% salinity

If you don't have access to seawater make reconstituted seawater from fresh water by adding 30g sea salt for every liter of water (30g/L)

Seawater diluted with water to between 0.3-0.1% salinity is useful for agricultural purposes.

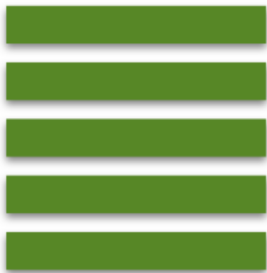
To make 0.3% salinity dilute seawater 1:10 with fresh water

To make 0.1% salinity dilute seawater 1:30 with fresh water

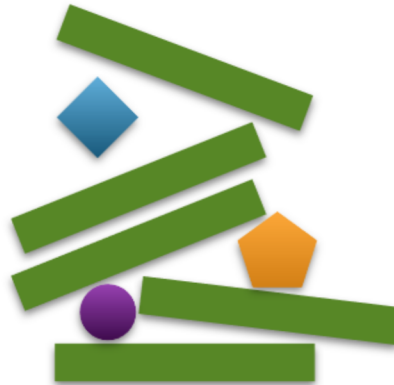
Alternatively with sea salt

To make 0.3% salinity add 3g sea salt for every liter of fresh water

To make 0.1% salinity add 1g sea salt for every liter of fresh water



Diluted seawater deposits minerals as it evaporates!



Mineralized soil.
Fluffy.
Airspace, Life!

Exhausted soil
Compact.
No air. No life.

•Contains DNA

and RNA

- Gather the top inch of water from the sea
- Near where sea crashes on rocks and is foamy
- Avoid places where large quantities of freshwater is entering the sea
- Mineral balance of seawater is same as amniotic fluid of mother, blood plasma of human, body fluid of plants.
- Seawater acts to chemically flocculate the soil adding to more airspace, water holding capacity, and homes for microbes.
- Add diluted seawater to exhausted land.
- Build soil texture.
- Relieve compaction.

To enhance ripening

2 weeks before harvest apply 1:20

1 week before harvest apply 1:15

2 days before harvest apply 1:10

for soil treatment drench 1:30
can go 1:15 if lots of rainfall.

Minerals helps the effectiveness of
Reproduction

Element (How it exists)	Average concentration (ng/kg of seawater)	
Cl (Cl ⁻)	19,360,000,000	
Na (Na ⁺)	10,780,000,000	
S (SO ₄ ²⁻)	2,710,000,000	
Mg (Mg ²⁺)	1,280,000,000	
Ca (Ca ²⁺)	417,000,000	
K (K ⁺)	399,000,000	
Br (Br ⁻)	67,000,000	
C (HCO ₃ ⁻)	26,000,000	
N (H ₂ NO ₂ ⁻)	8,270,000	
Sr (Sr ²⁺)	7,800,000	
B (B(OH) ₃)	4,500,000	
Si (H ₂ SiO ₃)	3,100,000	
O (Dissolved oxygen)	2,800,000	
F (F ⁻)	1,300,000	
Ar (Ar)	480,000	
Li (Li ⁺)	170,000	
Rb (Rb ⁺)		120,000
P (H ₂ PO ₄ ⁻)	62,000	
I (IO ₃ ⁻)	58,000	
Ba (Ba ²⁺)		16,000
Mo (MoO ₄ ²⁻)	11,000	
U (UO ₂ (CO ₃) ₂ ²⁻)	3,200	
V (H ₂ VO ₄ ²⁻)	2,000	
As (HAsO ₄ ²⁻)	1,700	
Ni (Ni ²⁺)		470
Zn (Zn ²⁺)	390	
Cs (Cs ⁺)	310	
Cr (CrO ₄ ²⁻)	260	
Sb (Sb(OH) ₆ ⁻)	240	
Kr (Kr)	230	
Se (SeO ₄ ²⁻)	160	
Ne (Ne)	140	
Cu (Cu(OH) ₂ [?])	130	
Cd (CdCl ₂ [?])	70	
Xe	66	
Fe (Fe(OH) ₂ [?])	34	
Al (Al(OH) ₃ [?])	27	
Tl	25	
Re (ReO ₄ ²⁻)	19	
Zr (Zr(OH) ₄ [?])	18	
Mn (Mn ²⁺)	16	
Y (YCO ₃ [?])	13	
W (WO ₄ ²⁻)	10	
He (He)	6.8	
Ti (Ti(OH) ₄ [?])	6.2	
La (La ³⁺)		2.5
Ge (H ₂ GeO ₄)	5.1	
Nb (Nb(OH) ₆ ⁻)	5.5	
Nd (NdCO ₃ [?])	3.6	
Hf Hf(OH) ₆ ⁻	3.4	
Ag (AgCl ₂ [?])	3.2	
Pb (PbCO ₃ [?])	2.7	
Ta (Ta)	2.5	
Er (ErCO ₃ [?])	1.3	
Dy (DyCO ₃ [?])	1.3	
Gd (GdCO ₃ [?])	1.3	
Ce (CeCO ₃ [?])	1.3	
Co (Co ²⁺)	1.2	
Yb (YbCO ₃ [?])	1.2	
Ga (Ga(OH) ₃ [?])	1.0	
Pr (PrCO ₃ [?])	0.8	
Te (TeO ₃ [?])	0.7	
Sc (Sc(OH) ₃ [?])	0.7	
Sm (SmCO ₃ [?])	0.6	
Ho (HoCO ₃ [?])	0.6	
Sn (Sn(OH) ₄ [?])	0.5	
Hg (HgCl ₂ [?])	0.4	
Lu (LuCO ₃ [?])	0.4	
Tm (TmCO ₃ [?])	0.3	
Tb (TbCO ₃ [?])	0.24	
Pt (Pt)	0.20	
Be (BeOH ₂ [?])	0.20	
Eu (EuCO ₃ [?])	0.18	
Rh (Rh)	0.08	
Pd (Pd)	0.06	
Th (Th)	0.05	
Bi (BiO ⁺)		0.03
Au (AuCl ₂ [?])	0.03	
In (In(OH) ₃ [?])	0.02	
Ru (Ru)	0.005	
Os (Os)	0.002	
Ir (Ir)	0.00013	
Ra (Ra)	0.00013	

Introduction to KNF Microbes: Simple Concepts



Neutral Microbes



Neutral Microbes are nearly everywhere whether you like it or not. They make up somewhere around 70% of the microbial community and will sometimes be beneficial and sometimes not, it depends on the others around them. They will side with the majority to decide whether they are good or bad, but ultimately they mean you no ill will, they just go with the flow. To get the neutral microbes to be good in our soil, we must ensure there are adequate populations of leader and effective microbes to make life easy for the neutral microbes.

“Good” vs “Bad” Microbes



There really are no “bad” microbes. There are only microbes that are out of balance for the ends and mission we are trying to achieve, and therefore hampering our objectives, so we perceive them as bad in this limited scope. In a broader scope that same microbe may be beneficial and in balanced populations they are essential to the functioning of a healthy system and they can be perceived as “good”. Therefore to label anything good or bad is a matter of circumstances and environmental conditions.

Indigenous Leader Microbes



In Korean Natural Farming we go through a precise process to ensure a team of indigenous microbes are the best leaders that will stimulate the other neutral microbes in the soil to motivate them toward beneficial traits that we desire as farmers. This process consists of collecting microbes adapted to the farming area. Then these indigenous microbes are fed really well and propagated at a temperature that ensures maximal reproductive conditions to grow massive populations. These microbes are then trained how to cooperate and work with your local soil.

When quality made indigenous leader microbes are introduced to the farm they teach the neutral microbes how to be good and they vastly outnumber any “bad” microbes leading to healthy and productive soils.



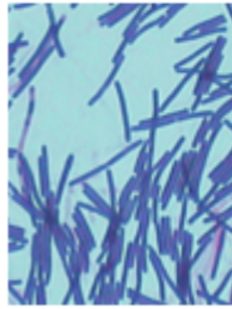
Police Microbes

We culture a broad family of Lactic Acid Bacteria microbes that excel at making the environment hospitable for farming. These microbes bring peace and balance even to the most toxic of environments, but at a much higher cost than Indigenous Leader Microbes, and need constant applications of external biostimulants to remain effective while they work.

KNF Police (LAB) Lactic Acid Bacteria



Lactobacillus are the most effective microbes in the Milky Way!



Recipe Materials

- 4 cups of white rice
- 4 cups of water
- 1 gallon of milk
- 8 lbs of brown sugar
- 3 1/2 gallon jars

Root Definition

lacto - milk
bacillus - stick

Increases vitality and resilience of micro & macro flora & fauna

Garden Use: dilute 1:1000

Use when police are needed. Effective, but “expensive”, be sure to “pay” with food.

Step 1

- ▶ Put rice in a bowl
- ▶ Add fresh water
- ▶ Stir with hands until water turns “milky”
- ▶ Pour liquid into a shallow dish excluding all solids
- ▶ With no covering, leave dish containing liquid on counter top
- ▶ Stop here. wait 24-72 hours, then continue.
- ▶ Congratulations! you’ve collected lacto out of the air, move on to step 2.



Step 2

- ▶ Pour the liquid from Step 1 into the milk, be careful to avoid sediment at bottom
- ▶ Cover with a breathable lid such as a paper towel or cloth rag
- ▶ Allow to ferment 2~4 days, when curds (fat) has solidified to the top and formed a firm “cake” as seen in the picture, move on to Step 3



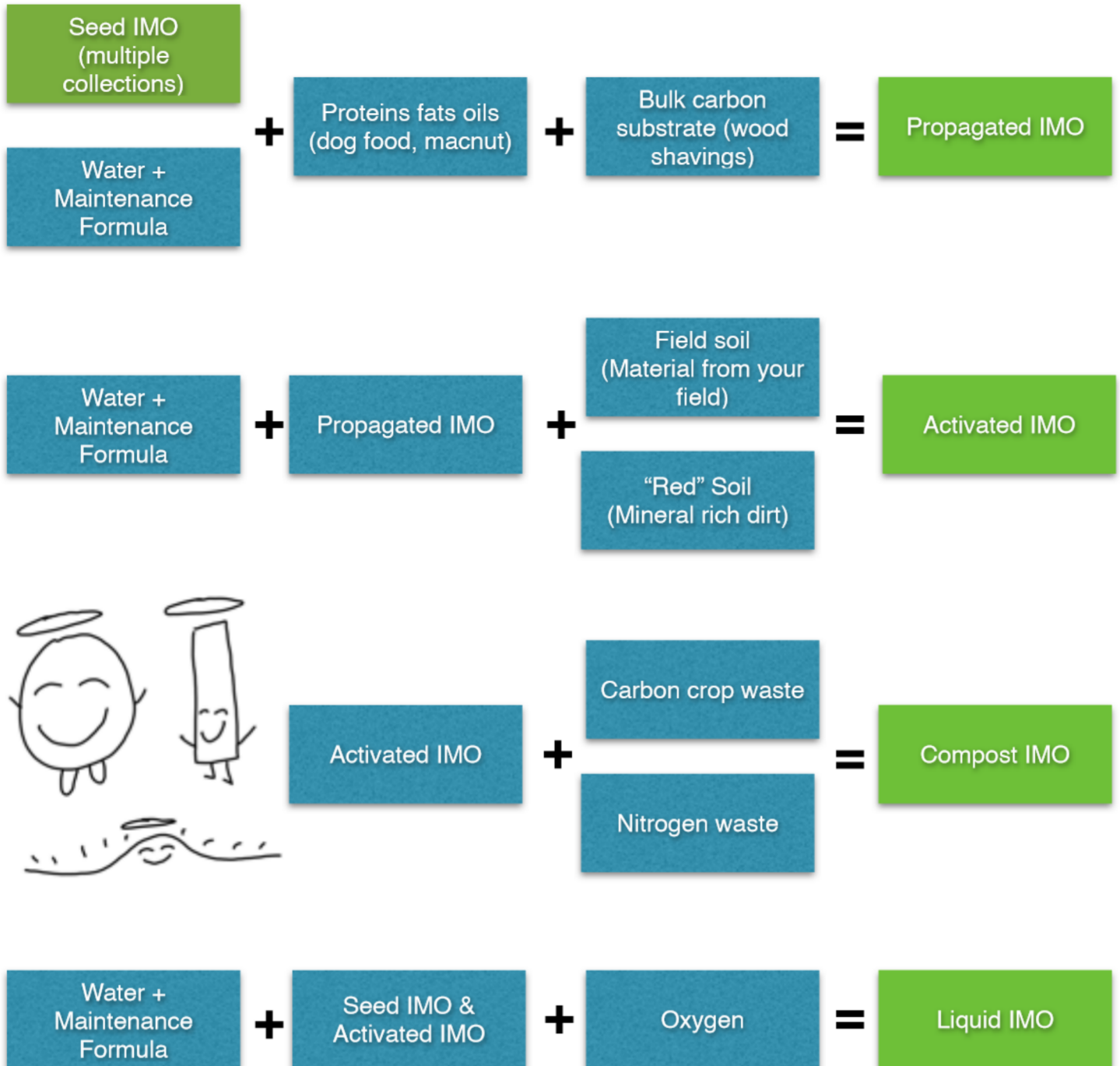
Step 3

- ▶ Skim off curds. This byproduct can be mixed with garlic and curry powder for a tasty treat, or fed to animals.
- ▶ Reserve the whey (lacto liquid)
- ▶ Add equal parts of brown sugar by volume to the lacto liquid (see picture)
- ▶ Stir in sugar thoroughly in a clockwise direction (with pleasant thoughts) to stabilize.
- ▶ Store for up to a year in a cool place out of direct sunlight



This recipe will yield 1.5 gallons of usable product that will effectively treat 60 acres. Any kind of non-rotten milk can be used. Cow, goat, human, whole, 1%, 2%, skim, powdered, etc. The ideal ratio of liquid from step 1 to milk is 1:10. So 1 gallon of “milky” water to 10 gallons of milk. *Advanced students’ note* Equal volumes of Sugar to liquid is needed to bind up moisture and subsequently arrest further fermentation preserving our product. The “chapped” effect will be noted on tongue when drinking a well made final product.

Indigenous Micro Organisms: Process Overview



IMO is more than just the microbes, it is a team building process of training native microbes to work in your specific conditions. The most economical way to use IMO on a large scale is through Liquid IMO and Compost IMO, but Activated IMO is one of the most useful substances on a Korean Natural Farm. Properly made Activated IMO is analogous to a microbe super leaders prepared to train the trillions of neutral microbes to be productive for your farm!



Microbes: Seed IMO Collection (IMO1)

- Gather Seed IMO from an area that has not been disturbed for at least 1 year. The accumulated leaf litter should be deep or white strands of mycelium should be visible in the soil and on decomposing organic matter.
- Ideally gather from an area within a mile your application area of equal or greater elevation.
- Forests and bamboo or banana patches are recommended areas to gather.
- Use either a wooden box or a container woven from a natural material. Cover with breathable lid ensuring it does not sag into the airspace.
- “Hard Cook” white rice and loosely fill container 2/3 full
- Think good thoughts during the collection process and be optimistic about a good collection. This may take several times to get it right. Be persistent.
- Collection time is between 60 hours to 11 days depending on temperature. Gather as soon as bottom is warm.
- Successful collection looks like cotton, will permeate the entire rice substrate, and smell like rich forest floor
- In cold climates bury collection box at least 1 foot deep
- Preserve Seed IMO within 15 minutes

Don't

- Gather from lower elevation
- Use a plastic container
- Compress rice into container
- Use really wet rice
- Cut off airflow with plastic cover
- Open container to “check if ready”
- Think some moldy thing in your kitchen is IMO



Failure



Acceptable



Correct

KNF Microbes: Seed IMO Preservation (IM02)



- Preservation must be done within 15 minutes of gathering IMO Collection.
- Mix equal weight of brown sugar and IMO Collection in a mixing bowl
- Fill a glass jar with the mixture until 2/3 of the jar is full.
- Wipe outer jar clean
- Cover with a breathable lid
- Label and date the collection
- Store out of direct sunlight in a cool area.
- 3-7 days after mixing Seed IMO is ready to be made into Propagated IMO
- Can be stored for up to 3 years at room temperature or centuries in a refrigerator
- If Seed IMO bubbles in storage add more brown sugar



A good natural farmer makes many Seed IMO from different locations and during varied weather conditions





Microbes: PIMO Propagated IMO (IM03)



Time: 1 week

Difficulty: Expert

Propagated IMO ferments for 7~11 days and must be turned many times a day as appropriate to keep the temperature below 120°F to produce high quality indigenous micro organisms.

General Recipe

50lb Minimum: ~1 Gallon of water for every 10lb of mill run Dilute into water

- 1:500 Seed IMO
- 1:1000 knfMedicine
- 1:500 knfCleanser
- 1:500 knfFood
- 1:1000 knfPolice
- 1:30 knfMinerals
- 1:1000 Humic/Fulvic Acids *(Optional)*

Mix water evenly into mill run

Cover with long grass.

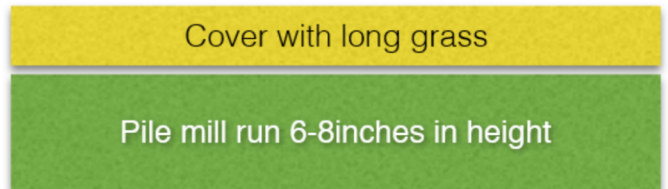
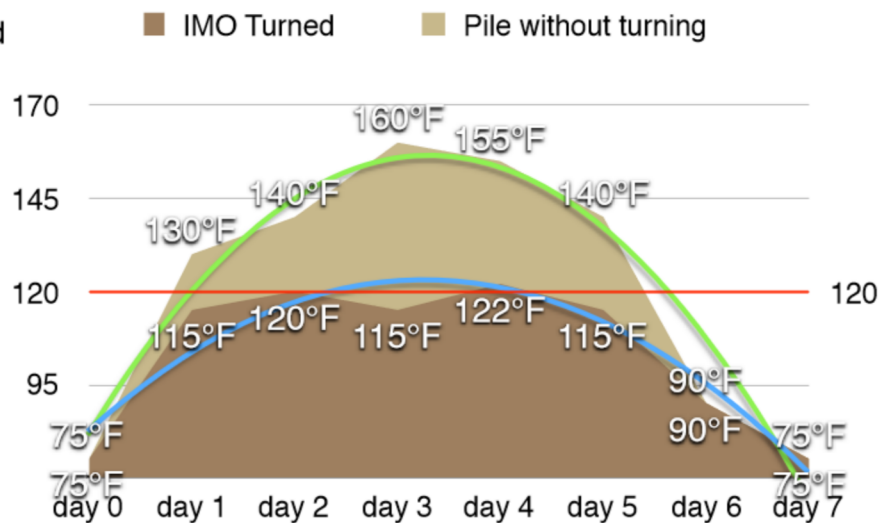
Turn as necessary

Record starting details and turning details

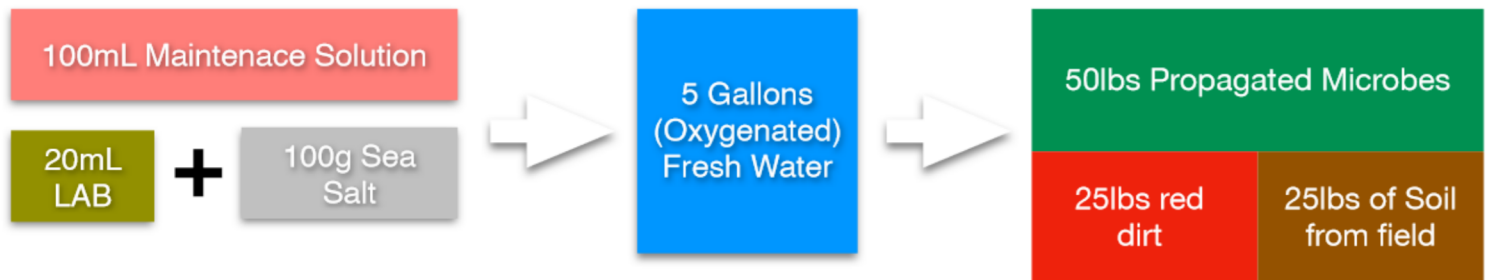
- Initial water will moisten mill run to 60% moisture content. Do not add water later.
- **Important:** Keep temperature below 120F; adjust height to manage temp
- Tip: Check 4x a day
- Turning will reduce pile temp by 10F
- Mix outer part into inner part while turning to encourage diversity
- IMO3 may take 7-14 days to cool to room temperature
- Correctly Propagated IMO will smell like bread baking early and forest floor when complete
- If smells like asphalt during light rain, it got too hot and tends to fail.
- If mill run is not available: blend 50/50 wood chips / dog food

Theory

Microbes go through a generation every 30 minutes. One week of fermentation for them is 10,000 years in our time. This time to breed in utopian conditions produce immensely diverse and robust indigenous micro organisms.



Microbes: Soil Activated IMO#4



As with the propagation of microbes, the same recipe is followed, the major differences is Seed IMO is omitted and there is an addition of Red Dirt and Field Soil.

Step 1:

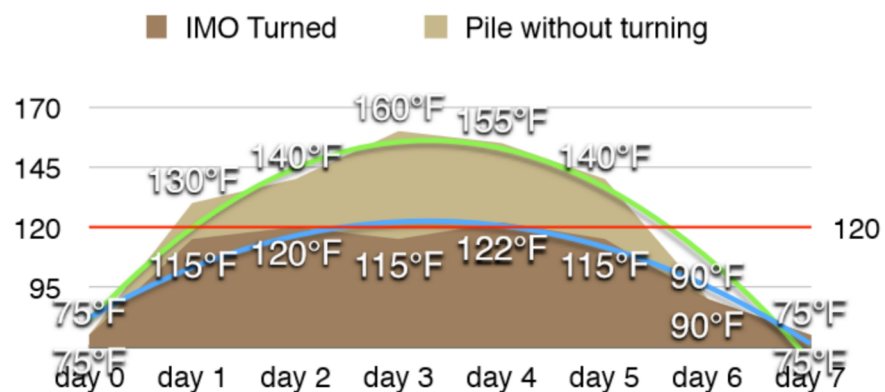
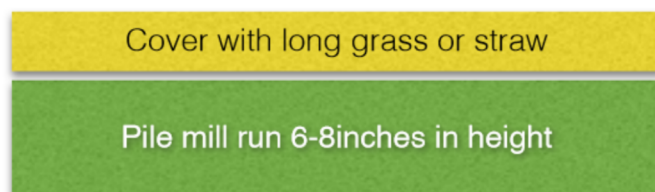
Add the solutions to water and moisten as the mixture is well blended. Stop adding solutions when the moisture content reaches 60%

Step 2:

Turn the pile before it reaches 120 degrees. Mix thoroughly as to encourage the microbes to breed with each other. Do not add any further water.

Step 3:

When pile cools, usually in 7-11 days, store in a breathable container or use within the next year.



Use in Soil Foundation Formula, Feed IMO, Compost IMO and any time there is a major soil disturbance.

3 Core Solutions of Cho Young-San

The image shows the Chinese character for water, '水' (shuǐ), centered within a light gray square. The character is written in a simple, black, sans-serif font.

Do not taste.

These recipes may save the world as they enable anyone to create near immediate soil fertility with almost no cost.

Disgustingly Cheap Microbes

50 Gallon Recipe

A Terribly Low Cost Solution

This recipe breeds Indigenous Soil Biology to be used in a liquid form

Water



5 gallons of water

Microbes



1/2 cup rich indigenous soil

Food



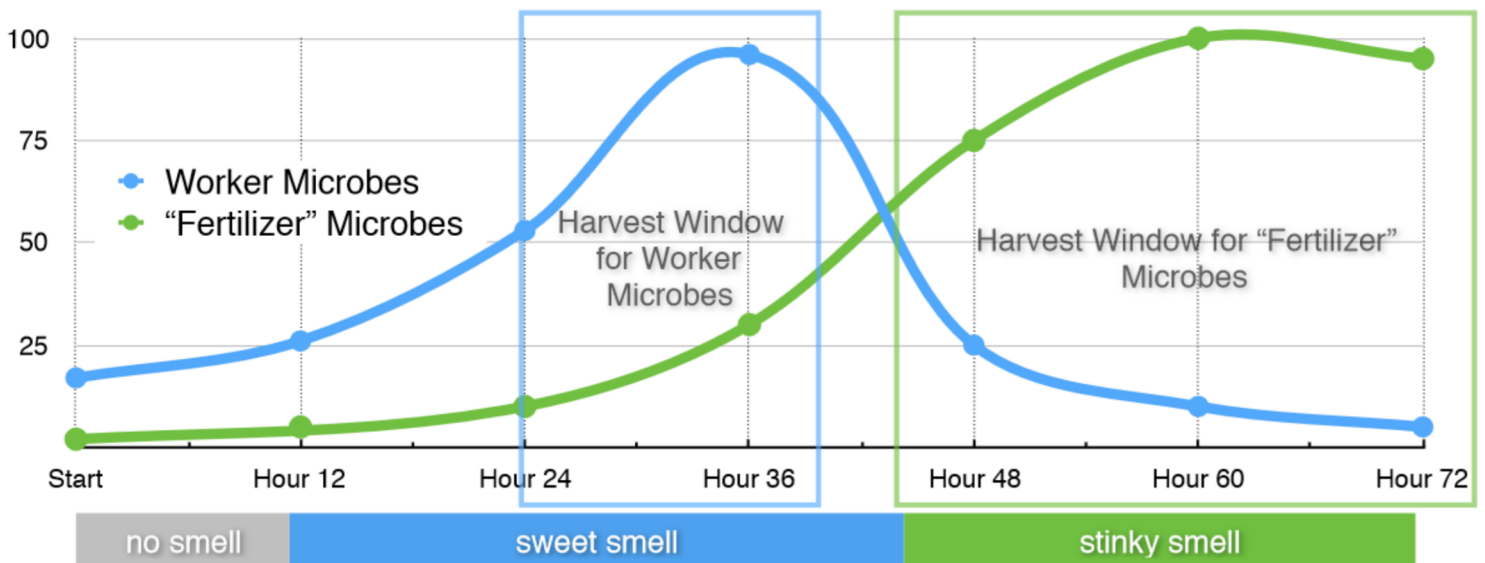
1/2 cup boiled potato or starch

Minerals



5tsp sea salt

Recipe: Blend the above ingredients together. Ferment 24-40 hours for worker microbes or 45+ hours for fertilizer microbes. Dilute with 1:10 with water. Use immediately!!!



Bubble rings will appear and smell will change according to various microbial populations in the water.

Disgustingly Cheap Food



Stinky but extremely affordable way to feed soil and plants



1. Pack barrel with a wide variety of grasses, weeds & plants



2. Fill with water.
3. Add handful of microbe rich soil.
4. Let sit for 2 weeks or longer
5. Draw off juice when needed

Dilute 1:100 with fresh water for general use

Continually refill with grass & water

Optional: Add food waste and meats to increase potency

Ecologically Friendly Wetting Agent: Soap.

Make Soap (L)	5	20	100
1st Water (L)	0.125	1	2.5
KOH (g)	160	640	3,200
Canola Oil (L)	0.9	3.6	18
2nd Water (L)	4	16	80

Mix KOH and 1st water in a microwave safe bowl. When fully dissolved add Canola oil and blend with immersion blender for 2-10 minutes depending on batch size. Do not over mix.

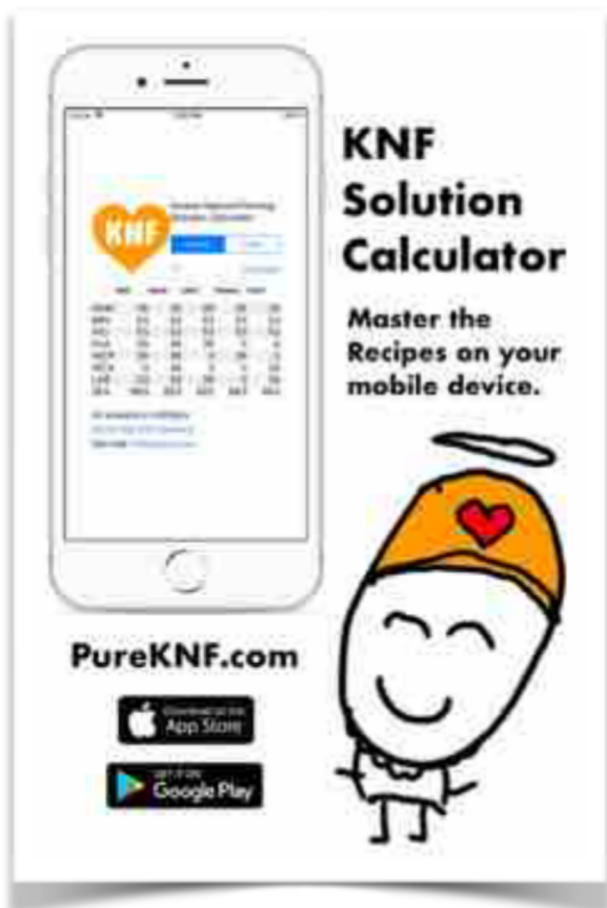
In 3 days add second water and mix to dissolve.

Use Soap (gal)	1	5	50	100
Soap light (mL)	25	126	1,262	2,525
Soap heavy (mL)	126	631	6,310	12,618

in 2020 your phone can do KNF for you!

Make it a no-brainer.

PureKNF Solution Calculator



We wrote an app that takes the second guessing out of diluting KNF Solutions.

Know the recommended amounts to add within seconds. It works for any volume in gallons or liters!

Download on your mobile from the Apple and Google Stores.

How accurate is the app?

Very! It's so accurate it hurts. In fact, the simple truth is you the farmer should be making minor adjustments based on your observations or even the celestial configurations, but this app is designed to get you close. Real close! If you think of it as a target to aim at, you'll always hit the mark!

What is this based on?

The latest teachings of Master Cho Han-Kyu and his system of Korean Natural Farming Nutrient Cycle Theory

How to Use the App

Example Let's make 7 gallons of Leaf Spray!



1 Enter volume of water 2 Press Calculate

	Soil	Seed	Leaf	Flower	Fruit
OHN	26	26	26	26	26
BRV	53	53	53	53	53
FPJ	53	53	53	53	53
FAA	26	26	26	0	0
WCP	26	26	0	26	0
WCA	0	26	0	0	26
LAB	53	26	26	0	26
SEA	883	883	883	883	883

All answers in milliliters

3 Add mL of each solution in the leaf column to water. Use in 24 hours.

4 Spray typically 25 gallons per acre on leaves or 100 gallons watering roots every week



Vegetative:
Body Formation



Transitioning from
Growing to Fruiting



Reproductive:
Ripening Fruit

Plant Chemical Composition

Stage	Vegetative	Puberty	Reproductive
Nitrogen	High (cell division)	Low	Low
Phosphorous	Low	High (root formation)	Medium (ripening)
Potassium	Low	Medium	High (flower formation)
Calcium	Low	Medium	High (structure)

1 Gallon Natural Farming Foliar Spray

Solution	How to make	Vegetative	Puberty	Pregnancy
knfFood (Leaf) (Fermented Plant Juice)	Ferment Plant Growing Tips With Brown Sugar 5 days	8ml	4ml	
knfFood (Fruit) (Fermented Fruit Juice)	Ferment 3 Fruits (ie. banana, papaya, guava) 5 days		4ml	8ml
knfCleanser (Fruit Vinegar)	Ferment Banana Fruit Juice with Water 3 months	8ml	8ml	8ml
knfMedicine (Herbal Medicine)	Tincture Cinnamon, Garlic, Ginger, Angelica, Turmeric, Licorice in 35% alcohol	4ml	4ml	4ml
knfFuel (Fish Amino Acid)	Ferment fresh Fish Waste with Brown Sugar	8ml	4ml	2ml
knfStructure (WaterSoluble CalPhos)	Dissolve Charred Calcium (like bones) in Vinegar	2ml	8ml	4ml
knfReproduction (Water soluble Calcium)	Dissolve Calcium (like egg shells) in Vinegar		4ml	8ml
knfMinerals (Sea Salt)	Dilute sea water 1:30 or sea salt 1g/L with fresh water	4g	4g	8g

To obtain picture perfect produce, spray weekly, a fine mist all over the plant. Adjust your dilutions based on results. A common error is to add too much Nitrogen causing leaf structure that invites pests, if leaf eating pests appear harden your leaves with Water Soluble Calcium.

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Learn more online at

www.pureknf.com

