

Soil and Plant Enhancers

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Soil and Plant Enhancers

- ▶ Fertilizer and plant enhancer's 植物增强剂
 - ▶ IMO - Indigenous Microorganisms 土著微生物
 - ▶ FPJ - Fermented Plant Juice 发酵植物汁
 - ▶ FAA - Fish Amino Acids 鱼类氨基酸
 - ▶ CAP04 - Calcium Phosphate 磷酸钙
 - ▶ CA - Calcium 钙
- ▶ Pesticides and Fungicides 杀虫杀菌剂
 - ▶ OHN - Oriental Herbal Nutrient 中药营养液
 - ▶ LABS - Lactic Acid Bacteria Serum 乳酸菌
- ▶ Fruit Enhancer 水果增强液
 - ▶ FFJ - Fermented Fruit Juice 发酵水果汁

Crop Management (Spray Schedule)

Fertilization Schedule:

Crops: Spray the plant foliage and base with the combined solution once a week in the morning or evening.

Fruit Trees: Spray the tree foliage and base once every two weeks in the morning or evening.

作物整株一周一次喷洒混合液，早晚进行；树木一周两次，喷洒树身和地上。

| GROWTH STAGES | VEGETATIVE GROWTH | CHANGE OVER PERIOD | REPRODUCTIVE GROWTH |
|---|--|--|---|
| Stage Level ----- | Week 1 - 5 When Crop plant is in a growing stage, and still increasing its vegetation. | Week 5 and 6 When Crop plant is maturing and ready for the flowering stage | Week 7+ When Flowers will develop into fruits |
| IMO -For microbial activation | Yes | Yes | Yes |
| FPJ -For chlorophyll | Yes | Yes | Yes |
| OHN- For disease prevention | Yes | Yes | Yes |
| FAA - For growth | Yes | (Optional) Applied only when growth is stunted | (optional) Applied only when growth is stunted |
| Calcium Phosphate For flower inducer | No | Yes | No |
| Calcium- Prevent fruit abortion | No | Yes | No |
| FFJ -For fruit sweetening | No | No | Yes (for sweetening of the fruit) |

Crop Management (IMO Spray)

Usage:

IN NATURAL FARMING, INDIGENOUS MICRO-ORGANISM (IMO) IS BECOMING POPULAR AMONG FARMERS. THIS INDIGENOUS MICROORGANISMS (IMO) HAS BEEN SUCCESSFULLY TRIED BY GOVERNMENT AGRICULTURISTS, ACADEMIC RESEARCHERS, NON-PROFIT ORGANIZATIONS AND FARMERS ALIKE. THEY HAVE FOUND THAT IMO IS USEFUL IN REMOVING BAD ODORS FROM ANIMAL WASTES, HASTENING COMPOSTING, AND CONTRIBUTING TO CROPS' GENERAL HEALTH.

在自然农法中土著微生物（IMO）正在受到农民的欢迎。这个土著微生物（IMO）通过了政府农学家，学术研究人员，非营利组织和农民都已经成功尝试。他们发现，IMO可以对动物的粪便去除异味，加速堆肥发酵，并对促进作物的整体健康有益。

Materials:

- ▶ Bamboo/wooden box
- ▶ Plastic bag
- ▶ Rubber band or string
- ▶ 1 Kg Cooked rice
- ▶ 1 Kg Brown sugar/molasses/mascado
- ▶ Plastic container
- ▶ Strainer



Crop Management (IMO Spray)

- ▶ 1. Cook a kilo of rice, preferably organic. After cooling, put the cooked rice in a wooden, earthen or ceramic container. Avoid plastic or aluminum. 煮一公斤的大米，最好是有机的。冷却后，把煮好的米饭在一个木制，陶制或陶瓷容器。避免塑料或铝
- ▶ 2. Cover the mouth of the container completely with cloth or paper, fixed in place with a rubber band, to prevent water or small insects from getting in. 覆盖容器完全用布或纸的口，固定在适当位置用的橡胶带，以防止水或小昆虫从得到的
- ▶ 3. Put the covered container, protected from possible rain, under the trees, in a bamboo grove, a forest floor, or wherever a thick mat of leaves has formed. Leave it there for three to five days. 放在有盖的容器，从可能下雨保护，在树下，在竹林中，森林的地面上，或任何厚厚的垫子叶子已经形成。离开它有三到五天。
- ▶ 4. Recover the rice and remove and rice that has black mold on it. 盖住大米和去掉大米上黑霉菌就可以了。



Crop Management (IMO Spray)

- ▶ 5. Transfer the entire contents of the container to a larger glass or earthen jar and add one kilo of brown sugar or molasses, preferably organic. 容器的全部内容转移到一个更大的玻璃或陶制的罐子，加红糖或糖蜜，最好是有机一斤。
- ▶ 6. Cover the jar with clean cloth or paper, fixed with a rubber band. Keep the jar in a dark, cool place. Let it ferment for seven days, until it appears muddy. This is your IMO concoction. 盖上罐子用干净的布或纸，固定用橡皮筋。请将罐子在黑暗，阴凉的地方。让它发酵七天，直到它出现浑浊。这是你的IMO汁。
- ▶ 7. Use strainer to separate the liquid. The liquid solution is the IMO. Store it into cool, dry and dark place. 使用过滤器来分离液体。该液体溶液是IMO，放它到阴凉，干燥，避光的地方。

How to use IMO

- ▶ Mix 10ml of the concoction with a liter of water. Spray the diluted solution around chicken coops and pig pens to remove unpleasant odors, on your compost pile to hasten decomposition, or on your crops to improve their general health by controlling pests and serving as foliar fertilizer. 混合药汁10毫升与一公升的水。周围喷洒鸡舍和猪圈的稀释液，除去难闻的气味，你的堆肥，以加速肥料的分解，或在您的作物，通过控制害虫并作为叶面肥，以提高他们的整体健康。



Crop Management (FPJ Spray)

- ▶ **Usage:** FPJ can be used to feed IMO, to enhance plant growth, and help produce greener leaves. FPJ是IMO的食物，促进植物生长，并有助于产生更多叶绿素。
- ▶ **Materials:**
- ▶ 2KG chopped banana trunk 嫩香蕉茎
- ▶ 1 KG brown sugar or molasses 红糖或糖渣
- ▶ Plastic container
- ▶ Strainer



Crop Management (FPJ Spray)

Plants commonly used to make fermented plant juice (FPJ)

| Common Name | Scientific Name | Plant Part |
|---------------|-----------------------|-----------------------|
| Angelica | Angelica Sp. | Shooting Tips |
| Bamboo | Various Genera | Shooting Tips |
| Banana Shoots | Various Genera | Shooting Tips (trunk) |
| Sweet potato | Ipomoea Batata | Tips and leaves |
| Squash | Cucurbita Spp | Tips and leaves |
| Watercress | Nasturtium officinale | Tips and leaves |
| | | |

The plants should be vigorously growing at the time of collection. Plant parts should be harvested while the plants are in respiration mode (before sunrise) and not in photosynthetic mode (during daylight), due to the effects these processes have on plant chemistry. Avoid collecting plant parts during or after rainfall (ideally, wait two sunny days after rain stops) and do not rinse collected plant parts, to conserve their surface microbial populations (lactic acid-producing bacteria and yeasts), which will carry out the fermentation process.

Crop Management (FPJ Spray)

- ▶ 1. Collect the banana trunk early in the morning. This needs to be a small banana shoot under 70 cm tall. Cut or slice it into small pieces.
- ▶ 2. Place the 2 Kg chopped banana trunk into the container with 1 Kg Brown sugar or molasses.
- ▶ 3. Cover the container and place it into cool, dry and dark place. Ferment for 7 days.
- ▶ 4. Use strainer to separate the FPJ solution from the chopped banana trunk.

How to use FPJ: Mix 1ml with 1 liter of water. Spray with your IMO to help improve soil and plant growth. If prepared properly the liquid can also be consumed by animals and humans to help digestion problems.



Crop Management (FAA Spray)

- ▶ **Usage:** Fish emulsions have been documented to promote seedling growth), fruiting, and microbe action in the soil (El-Tarably et al. 2003). It help with nitrogen production.

Materials:

- ▶ 1 kilo of Fish trash (head, bone, intestines, scales, gills, etc.)
- ▶ 1 kilo of molasses, Brown Sugar, or muscovado
- ▶ 1 plastic container or Jar
- ▶ Strainer



Crop Management (FAA Spray)

- ▶ Collect and cut a kilo of Fish into small pieces.
- ▶ Place the Fish pieces inside the Jar.
- ▶ Put in a kilo of molasses/Sugar in the Jar and mix.
- ▶ Cover the Jar.
- ▶ Place the jar in a cool dry place, away from sunlight and rain. Leave it there for 20 days.
- ▶ After 10 days, separate the liquid from the solids with a strainer. The liquid has the Fish Amino Acids (FAA).

How to use FAA: Mix 10ml with 1 liter of water. Spray with your IMO to help improve soil and plant growth.



Crop Management (CaP04 Spray)

Usage: Add water soluble Calcium Phosphate to your plants to encourage flowers to bloom.

Materials:

- ▶ 100 grams Animal Bones
- ▶ 1 Liter Coconut Vinegar or brown rice vinegar
- ▶ Plastic Container
- ▶ Strainer



Crop Management (CaP04 Spray)

1. Remove the meat and fats attached to the bones by boiling.
2. Broil or grill the animal bones until it became charcoal black.
3. Cool it down and pulverize the bones.
4. Place 100 grams pulverized animal bones in a container. Add 1 Liter of Coconut vinegar.
5. Ferment for 30 days. Use strainer to collect the CaP04 solution.

How to use: Add 10ml to 1 liter of water and spray on flowering and fruiting plants. The best times to spray are just after sundown or very early in the morning, to prevent leaf burn and to allow sufficient time for absorption before evaporation from the leaf surface. Use a light mist; do not spray so heavily that the solution drips from the foliage (run-off). .



Crop Management (Ca Spray)

Usage: Add calcium to flowering plants to prevent fruit abortion.

Materials:

- ▶ 100 grams Egg Shells (oyster or clam shells may also be used)
- ▶ 1 Liter Coconut Vinegar or brown rice vinegar
- ▶ Plastic Container
- ▶ Strainer



Crop Management (Ca Spray)

1. Remove inner egg membrane from the shell prior to roasting.
2. Break the shells into small pieces
3. Panfry the Egg Shells until they became dark.
4. Cool it down and pulverize the egg shells.
5. Place the 100 grams pulverized egg shells in a container and add 1 Liter of Coconut vinegar.
6. Ferment for 10-20 days. Use strainer to collect Calcium solution.



How to use: . The best times to spray are just after sundown or very early in the morning, to prevent leaf burn and allow sufficient time for absorption before evaporation on the leaf surface. Use a light mist; do not spray so heavy that the solution drips from the foliage (run-off). .



Crop Management (OHN Spray)

Usage: OHN is used to prevent invasive fungus' and help fight insects.

Materials:

- ▶ 1/2 Kg Garlic
- ▶ 1/2 Kg Ginger
- ▶ 1 / 2 Kg cinnamon
- ▶ 1 / 2 KG Licorice
- ▶ 1 KG of angelica
- ▶ 1 Liter Beer
- ▶ 250 grams of hot peppers
- ▶ 1 of Liters Gin or rice wine (30-40% alcohol)
- ▶ 250 grams brown sugar, or molasses



Crop Management (OHN Spray)

1. Clean and slice the g garlic and ginger into small pieces.
2. Clean and slice 250 grams of hot peppers into small pieces.
3. Put the sliced garlic, ginger and peppers into an empty container.
4. Add 1 Liter of Beer into container and ferment for 24 hours.
5. After 24 hours, add 250 grams of mascovado or sugar and Ferment for 5 days.
6. After 5 days, add 2 Liters of Gin or rice wine and ferment for another 10 days.
7. After 10 days, harvest 2 Liters of OHN solution.
8. Use strainer to separate the OHN solution from the garlic or ginger.
9. The remains of OHN will be extended by adding 2 Liters of gin again and ferment for another 10 days. This will be done 3 times. Add handful of chili or neem seeds or makabuhay to add more strength on the solution on the fourth time.

How to Use: Mix 10ml with 1 liter of water and spray on foliage.



Crop Management (LABS Spray)

- ▶ **Usage:** Lactic acid bacteria (LAB) are ubiquitous microorganisms that can be beneficial in crop and livestock production.

Materials:

- ▶ 1 part Rice Wash (100 ml)
- ▶ 10 part Fresh Milk (1 liter in tetra-pack)
- ▶ Syringe
- ▶ Plastic Container
- ▶ Strainer



Crop Management (LABS Spray)

1. Collect rice wash and place it in a container.
2. Ferment for 7 days. Collect 100 ml from the middle part of the container with rice wash using syringe.
3. Inject the 100 ml of rice wash into 1 liter of fresh milk (from a tetra-pack) after removing 100 ml of milk.
4. Ferment the milk with rice wash for 10 days.
5. Separate the liquid from the solid (cheese). The liquid is the LABS.

How to use: Add 10ml with 1 liter of water. LAB culture is diluted at a 1:1,000 ratio with water, mixed with a plant nutrient solution such as fermented plant juice (FPJ) (Miller et al., in press), and applied as a foliar spray to leaf surfaces of leaf or fruit crops. Note: Over-application of LAB culture to fruit crops may result in the loss of sweetness (lowered brix) of fruits. Apply sparingly in the latter stages of the fruiting season.



Crop Management (FFJ Spray)

Usage: Helps make the plant and fruits sweater.

Materials:

- ▶ 1 Kg Ripe Fruits (Mango, Banana, Papaya) Don't use citrus fruits.
- ▶ 1 Kg brown Sugar
- ▶ Plastic Bottle
- ▶ Strainer



Crop Management (FFJ Spray)

1. Peel 1 Kg of ripe banana /fruits and slice into small pieces.
2. Put the 1 Kg sliced ripe fruits into the container and add 1 Kg of mascovado by layer.
3. Cover the container and ferment for 7 days. Use strainer to separate the FFJ solution from the fruits.

How to use: Mix 10ml with 1 liter of water and spray on the foliage of the plant.

