

"Do It Yourself Homemade Plant Fertilizers."

Making your own nutrients should be exciting. I know I get all crazy when it comes to feeding my soil and you should too. When you uncap a bottle of your own nutrients, or feed with one of your fresh botanical teas, you experience a really cool feeling. That feeling is one of self-sustainability and pride. Sometimes I catch myself talking to the plants like pets... and feeding them better than I do myself.

I won't get too weird on you just yet, but if your plants are spoiled like mine are, then you and your plants will both love using homemade nutrients. It's like switching from Fast food to Super food!

Now it's time to decide which is best for you: Fresh vs. Fermented

Fresh Botanical Teas:

When you want the secondary metabolites, vitamins etc. When you know that your soil is already full of all the Major nutrients. These teas will supplement your grow and act as a booster to plant health and vigor without being overpowering. These typically use dried plant meals as the main source and will have small particles of the meal present in the water when used. Once the Botanical tea is drenched into the soil, the microbes will go to work on the particles and left over material from your fresh botanical tea, unlocking even more material. This method is often used because top dressing with straight dried plant material will often cause burning of the plant and unwanted problems, but a quick soak in water and you can now drench the soil with the strained water.

Making a botanical tea typically involves using dried plant meal, but can also utilize fresh growing tips of plants. The desired plant material is then soaked for 24-72 hours and then used right away. Use of an air-stone to bubble the water is preferred but not necessary. It's mainly to

keep the plant material in motion, so you could always just stir it every once in awhile. I will go into detail on the entire process soon.

Fermented Plant Extracts:

Most of the so called “organic” liquid fertilizers on the market are simply a fermented plant extract done on a commercial level. There are several reasons why making your own is better than buying the stuff on the Hydro-Shop Shelves.

- 1. You will have a better product for pennies on the dollar.**
- 2. You can hand select the plants being used. In that way you can make a special FPE for almost any situation, from Veg to Flower, and in-between.**
- 3. You can do this all cold without adding any high heat like most of the fertilizer companies do. Think of it like getting premium first cold pressed Olive Oil compared to cheap chemically extracted stuff.**
- 4. You won't have to add any preservatives whether natural or not, these preservatives harm the overall final product and you won't have to add any! Your home made FPE can sit on the shelf for up to 1 year and sometimes longer all on its own.**

“FPE” or Fermented Plant Extracts are one of the purest forms of organic fertilizer available to any gardener. The final product should be used a dilution rates of 1:500 or 1:1000 and will be very strong.

Which Plants To Use? (This information applies to both methods)

Now that you understand the difference between Botanical Teas and Fermented Plant extracts better I want to share some information about the types of plant material you will want to use for your nutrients.

Most of the plants that I prefer to use fall under the category of Dynamic Accumulators.

Dynamic Accumulators are the heavy hitting plants that contain all of the major nutrients in them as extracted from the soil they grew in and the air that surrounds them. Many of these plants grow fast and when they die, they release nutrients and nitrogen back into the soil to help continue the cycle. Here is a list of plants and the basic nutrients they contain within them. This list will help you in choosing what to do with a particular plant, or in finding a plant with a particular nutrient that you require.

[Download the Free Excel Spreadsheet -Click Here!](#)

Data Source:		http://web.archive.org/web/20130126052424/http://www.ars-grn.gov/duke/ http://www.ars-grn.gov/duke/												
		Macro (primary) nutrients			Macro (secondary) nutrients				Micro (trace) nutrients					
		(N)	(P)	(K)	(S)	(Ca)	(Mg)	(Si)	(Fe)	(Mo)	(B)	(Cu)	(Mn)	(Na)
Malva neglecta	Common Mallow	4,200												
Malva sylvestris	High Mallow	3,300	5,000			10,715			440					
Chenopodium album	Lambsquarter	36,833	87,100			33,800			250					250
Amaranthus	Pigweed	10,082	73,503			53,333	6,616		1,527			19		2,406
Urtica dioica	Stinging Nettle	6,800	37,220	6,665	33,000	8,600	6,500		418		36	15	172	491,400
Allium schoenoprasum	Chives	6,437	31,250			10,375	6,875		200					750
Verbascum thapsus	Mullein	5,700				13,300		74	2,360					760
Taraxacum officinale	Dandelion	4,583	27,569		3,300	13,000	2,500		5,000		125		12	130
Artemisia vulgaris	Mugwort	3,150	22,000		2,800	6,455			118				20	170
Borago officinalis	Borage		67,210			5,005								
Trifolium pratense	Red Clover						8,100				23	18		464
Helianthus tuberosus	Jerusalem Artichoke											30		
Chrysanthemum parthenium	Feverfew		39,385			5,810	2,400	46					81	48
Scutellaria lateriflora	Scullcap		21,800			4,550	1,130	48	250				47	160
Oreganum vulgare	Oregano		18,647			18,794	3,016		598			9	47	205
Stellaria media	Chickweed		18,400		3,828	12,100	5,290	157	2,530				153	1,470
Equisetum arvense	Horsetail		18,000			24,000	4,370		1,230				69	560
Achillea millefolium	Yarrow		17,800			8,670	1,920	45					50	82
Cichorium intybus	Chicory		37,128			18,900	2,652		246					1,428
Salvia officinalis	Sage		24,700			17,957		31	305		41	8	31	1,080
Portulaca oleracea	Purslane				6,300									7,400
Oenothera biennis	Evening Primrose					23,400	3,900							
Thymus vulgaris	Common Thyme					16,700	4,360	202	1,508		48	9	79	1,490
Calendula officinalis	Calendula					30,400								
Rheum rhabarbarum	Rhubarb					14,400			250					
Rumex crispus	Curly Dock					10,000								
Symphitum officinale	Comfrey		242	1,870		1,980	77	1	1.3				0.6	12

The above table was created using [Dr. Duke's Phytochemical and Ethnobotanical Databases](#)

Using the Above table you will start to notice right away that plants contain very different levels of nutrients depending on what type of plant they are.

If you are hoping to make a Fermented Plant Extract for the flowering phase of growth what would you do?

I would probably choose Stinging Nettle, Mugwort, Dandelion, Chives etc. because the numbers they display in the Potassium and Phosphorus areas are off the charts. While it is important to have the

basic Macronutrients that will create larger flowers, we cannot afford to forget about the secondary metabolites and other reasons to use a particular plant.

Here is another website to visit that will allow you to read more into each plant as you make a nutrient from it.

[Dr. Christopher's List of Single Plants](#)

If you have some time today, read about Comfrey, I think you'll be surprised how much that single plant has to offer for human health and plant food.

Just make sure that if you grow your own, you look into the Bocking 14 comfrey cultivar that won't take over your entire yard.

Which Part of the Plant to use?

Now that you know how to identify which plant to use, how do you choose the right part of the plant, and where do you find the plants?

Method #1:

Go on a nature walk around your house or somewhere nearby where there is an abundant amount of fresh and wild growing native plants. Choose an area where the plants are growing in healthy soil that way you can have confidence that there are many nutrients in the plant tips you end up cutting.

If you happen to notice a wild patch of Stinging Nettle, comfrey or really any fast growing healthy plants, then you should harvest them. But you won't need the whole plant. You only require the fresh green tips of the plant, the youngest and most tender part. There are several reasons to choose the growing tips. Some say that you should use the flowers if you want a flowering nutrient and use the green growth if you want a vegetative nutrient. You can decide for yourself by using the spreadsheet I linked above. In the spreadsheet you will notice a number of pages on the bottom that you can select. In the sub-pages you will find the plant species broken down into parts of the plant. Sometimes the roots are best

to use, sometimes the green growth is the best. Ultimately you will have to decide for yourself and experiment with what works in your garden. But from experience, most Korean natural farmers use the green growing tips of the plant.

Method # 2:

Go to the grocery store and purchase some organic veggies and fruit to use for your Fermented Plant Extracts.... This works if you live somewhere where there aren't many plants available immediately around you, or in winter when it's snowing and not many healthy young plants are growing.

Method #3:

Grow your own Dynamic Accumulators and harvest them whenever you want to make your nutrients. Grow them in fertile soil with plenty of nutrients and minerals for them to use.

Method #4:

Use a dried plant meal like Kelp meal, Comfrey Meal, Alfalfa Meal, Neem Meal etc.

Method #5: Slowly becoming my new favorite. Grow your own sprouts! And then use the sprouts to make your FPE or Botanical Tea. Try Alfalfa sprouts. They are awesome.

How to make a Botanical Tea

Items Needed:

5 Gallon Bucket with Lid

Fresh Pure Water

Plant Material to Soak

Optional Items:

1 or 2 Aquarium Air stones

Cheap Aquarium Pump

How to make:

Fill the bucket with 4 -5 gallons of water and toss in some plant material. Bubble the water or stir occasionally for 3 days. You can use a botanical tea after 24 hours if you require it. But it will only get stronger up until around 3 days. I typically don't want to go longer than 3 days because without fermentation it won't get any stronger and if fermentation is happening, I would rather use the Fermented Plant Extract Methods.

Here is an example of a recipe that I use all the time

Alfalfa Kelp Tea

1 Cup Alfalfa Meal

½ Cup Kelp Meal

Soak for 3 days in your bucket of water and use right away at full strength on full size plants and at ½ or ¼ strength on smaller plants. I notice an impressive boost of growth after applying this tea even 1 time. Strain before using and toss the left over alfalfa and kelp into your worm bin or compost pile!

How To Make Fermented Plant Extracts

- 1) We harvest the fast-growing leaves of plants such as comfrey, stinging nettle, mugwort, or vegetables just before dawn, when the growing tips are believed to have the highest concentrations of growth hormones. That is why I also recommend using Home Grown Sprouts.**
- 2) Dirt, insects, and other contaminants are removed by shaking or brushing. NO WASHING. Washing will remove many of the beneficial bacteria that we will require to get fermentation. (Use Lactobacillus Serum if you are using sprouts or meals etc.)**
- 3) The harvested vegetation is weighed and set aside.**
- 4) An equal amount, or up to 2/3 more, of high quality brown sugar is weighed out. Some will use Molasses.**
- 5) The vegetation is finely chopped and layered with the sugar in a clean crock or bucket.**
- 6) The material is then weighted down with a weight or “press.” Some use a brick, some use a black bag of water for a weight. (I don’t do this in small fermentation batches)**
- 7) We remove the press after 24 hours and cover the container with a breathable, natural fabric, securing it with a large elastic band. If you don’t have a breathable fabric then poke holes in your lid or don’t screw the lid on all the way.**
- 8) It is placed in a dark location. Ideal ambient temperature should be 65°-70° F.**
- 9) After about one week, the brown, syrupy liquid that accumulates is drained off and stored in a glass container in the refrigerator. (We understand it can be stored this way indefinitely but choose to keep it for 1 year at the longest)**

10) Fermented Plant Juice can be used as a foliar spray, diluted at about 1:500 (about one ounce to four gallons) with water and other spray nutrients. (We use materials like fish emulsion, seaweed extract, micronized minerals, etc.)

11) Apply foliar sprays only in the coolest parts of the day to be effective. In the past, we've felt that early hours of the morning were best.

Here is an example of a Miniature Fermentation project that Patrick over at gilcarandang.com was kind enough to blog about.

[GilCarandang.com](http://gilcarandang.com) Blog info:

I have two balconies in my little urban apartment. One holds my urban garden while the other is an eclectic mix of plants, animals, experiments and other weird stuff I'll talk more about later. In this space, I have limited plants to choose from. I won't end up with a kilogram of plant material to work with, more like a couple grams.

But even in my small farmyard, I've noticed some fast-growing weeds, and even cultivated them a little to make my "micro-extract". These fast-growing vines will be perfect for my growth promoter extract:



You want to select the fastest growing part of the above-ground plant – the tips. So now I select the growing tips:



Once I've cut a bunch of tips, I'll have a lot from each plant. Still nothing compared to what you would find on a "real" farm.



Now to put them in a little container. TIP: You can find little plastic containers pre-labelled at just about any pharmacy anywhere – specimen jars! They make perfect mini-fermenters



Now that I have all the plant material in the container, I pulverize it a bit to break down some of the tougher material . This step isn't necessary but I think it helps with extraction.



Add 1/3 part sugar, in this case molasses, the favorite sugar source of natural farmers here in the Philippines. I didn't measure this out, just eyeballed it. I'm a farmer! If it'll get the job done, it'll work.



Now add the secret sauce. You don't have to do this but it greatly speeds up/enhances fermentation if you do. Add a couple drops of lactobacilli serum. Don't need much at all especially in a container this size



Finally, fill with water. Fill to near the top, screw the cap on but don't seal it as some gas will form during fermentation. Then date and name it accordingly on the handy little label that came on the container.



This will be good for a few feedings later on when I need to fertilize and want to add some growth promoting hormones, enzymes, etc.

You can tighten the lid when you see bubbling stop after several weeks. You will also notice the smell as it finishes fermenting. It should smell a bit like vinegar. That is the acid that is a byproduct of fermentation. Here's what it looks like after 3 weeks:



This was stored in a dark place and just left alone with the lid cracked for 3 weeks. I checked it periodically, you will see the bubbles on the sides each time you check, signs that it is indeed fermenting. I would usually tighten the cap and give it a shake but this isn't necessary really. After 3 weeks (actually a lot sooner this time, but leaving it longer doesn't matter), you'll stop seeing bubbles on the sides, and the smell will be like alcohol/vinegar/sour – the fermented smell.

There you have it, your own little mini-extract! The whole process takes 5 minutes and I end up with a great product. I'll mix this with my homemade fish fertilizer, and use that on the garden when I want to feed in the future. The fish fertilizer provides the Nitrogen while this extract provides the growth promotants. Great combination.

Here is a link to making the [Fish Fertilizer](#)

Those familiar with the Grow recipe will notice that I added water, where the recipe doesn't call for adding water. That's how I adapted the recipe for this small scale use. It will be a little more diluted than if I hadn't added water, but there wasn't enough plant material to do it that way. As long as you stick to the principles of the recipes, you can adapt them depending on your situation, like substituting pumpkin for papaya in the bloom recipe, or snails for fish in the fish fertilizer recipe.

Check out more cool stuff from Patrick over at GilCarandang.com

Supplemental Tools to use with Botanical Tea and FPE

Now that you are aware of the different methods available for making your own plant nutrients I want to touch on a few beneficial ingredients that can really ramp up the overall health of your plant and its productivity.

Aloe Vera:

You can use the Fresh Leaves, or you can use Freeze Dried Powder in 200x pure form. Aloe Vera has saponins and salicylic acid. When you are finished mixing up a fresh botanical tea I like to add about ¼ Cup of Fresh Aloe Vera Juice per Gallon of water. This will help keep the moisture in the soil and also increase the health of the roots and plant. Some growers report that Aloe foliar sprays help with intense heat and indoor lighting.

Coconut Water:

I will have a whole Blog Article about coconut water. But the coconut is basically a large seed and the liquid inside has enough growth hormones and nutrients to support the growth of an entire baby tree... so it will have MUCH to offer your roots and plant in the soil. I like to use freeze dried organic coconut powder but you can easily purchase this as a young coconut at the health food store or asian market.

Ful-Power - A liquid Humic product from Bio-Ag

This product is one of the last bottles I'll use because making your own isn't exactly easy. Humic and Fulvic acids assist with the uptake of nutrients and are the building blocks of good compost and good soil. Using a liquid version FUL POWER from Bio-Ag you are adding an incredible boost to the efficacy of your Tea solution.

Example of how to use these add on products:

Alfalfa Kelp Botanical Tea:

1 Cup Alfalfa Meal

½ Cup Kelp Meal

Put into a 5 gallon bucket of clean water and let bubble for 36 hours.

Once finished add:

1 cup aloe vera juice

1 cup coconut water

5 oz. Ful Power

That recipe is a WINNER!

If you haven't already watched our video on how to make your own Lactobacillus Serum You should check it out!

How To Make
Lactobacillus
Serum

Click Here

Brought to you by:

<http://www.youtube.com/user/BuildASoil>

Conclusion:

Start making your own Botanicals and FPE's today!

Why would you ever go back to buying bottled nutrients again? The really cool thing is that these recipes only take a few minutes out of your day to make and use, especially once you have the science down. I really like to use a special tea at least once per week, but sometimes I only get around to it twice per month. Tinker with this information and work at it until you have your own recipes and concoctions. Just keep the principles the same and follow the basics. Ultimately if your plant is growing healthy, then we are only providing these supplements as a way to boost the overall yield and quality of our final product. When we give the our soil and plants the most stress free environment in which to produce fruit and flower, we will see a tremendous increase in productivity!!!

Please share this information with everyone you know and don't feel bad about editing the text or giving it away for free. Of course, if you sent them over to my website and had them register for our newsletter that would make me really really happy! And then I will personally send them a copy of this Free Report.

Happy Growing,

Jeremy Silva

www.BuildASoil.com

855-877-SOIL

P.S. The ultimate goal of the No-Till Grow is to eliminate all of these nutrients and have a soil that is full of life, but in the beginning these recipes will serve you well. If you have questions about how to eliminate all of your supplementary fertilizers, feel free to email me personally at Jeremy@BuildASoil.com



Natural Farming: Fermented Plant Juice

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Introduction

Hawai'i is heavily dependent on imported food to feed its residents and visitors; moreover, conventional agricultural production in the state also relies on imported inputs (feed, fertilizer, compost, pesticides). In order for Hawai'i to move toward food self-sufficiency, reliance on imported food and agricultural inputs must be reduced while increasing food production using locally available, economical inputs. Hawai'i's farmers cannot continue on their present course without serious repercussions to their sustainability, both economically and environmentally. Alternate agricultural production systems adapted to the semi-tropics, including organic and permaculture methods, have met with varying levels of success.

Korean Natural Farming (KNF) is a sustainable system developed by Master Han Kyu Cho of the Janong Natural Farming Institute in South Korea, based on generations of sustainable farming methods practiced in Japan, China, and Korea. KNF optimizes the production of plants or livestock through farming methods that maintain a balance in nutrient input and output, thus minimizing any detrimental effects on the environ-



Figure 1: Young, vigorously growing angelica herb is a good choice for making FPJ in Hawai'i.

ment. The balance is maintained by encouraging the growth of naturally occurring indigenous microorganisms (IMO), which in turn produce nutrients that are used in the production of crops and livestock. Virtually all of the inputs used in KNF, as compared to those used in conventional agricultural practices, are available locally at a fraction of the cost of imported feeds, composts, and fertilizers. Cultivation of IMO was covered in a previous publication (Park and DuPonte 2008). This bulletin covers the preparation of another KNF input, fermented plant juice (FPJ).

What Is Fermented Plant Juice?

FPJ is used in solutions for seed and soil treatments and plant nutrition. It consists of the young shoots of vigorously growing plants that are allowed to ferment for approximately 7 days with the aid of brown sugar. The brown sugar draws the juices out of the plant material via osmosis and also serves as a food source for the microbes carrying out the fermentation process. The weak alcohol produced during fermentation extracts chlorophyll (soluble in ethanol) and other plant components. It is non-toxic and edible.

What Affects the Quantity and Quality of FPJ?

The most important requirement when selecting plants for making FPJ is to use the growing tips of plant species that are fast growers. Flowers, flower buds, and immature fruits can also be used. Hard or woody plant parts will yield little or no plant juice. 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. Low levels of these microbes will result in improper fermentation and/or low yields of plant juice.

What Kinds of Plants Can Be Used to Make FPJ?

Plants should be vigorous, fast-growing, and healthy. In Korea, the most commonly used plants are mugwort (*Artemisia vulgaris*) and dropwort (*Oenanthe javanica*). Other ideal choices grown locally include, but are not

limited to, purslane (*Portulaca* or pigweed), watercress, angelica (see Fig. 1), bamboo shoots, sweetpotato vines, beans, pumpkin, and seaweeds (Table 1). KNF practices emphasize using what is available. Do not use poisonous plants; if in doubt, have plants identified through your local extension service.

When Is the Best Time to Make FPJ?

FPJ can be made year-round in Hawai'i. In temperate climates, FPJ is usually made during the warmer months when plant growth is vigorous and growing tips are abundant.

Making Fermented Plant Juice (FPJ)

Step 1. Collect plant material

Before sunrise, collect the fast-growing tips (2–3 inches long) of plants; for plants with longer tendrils, such as sweetpotato, longer pieces can be collected. Avoid collecting during or after rainfall.

Step 2. Cut and weigh the plant material

Do not rinse collected plant parts, so as to conserve surface microorganisms. Record the weight of the

Table 1. Plants commonly used to make fermented plant juice (FPJ) in Hawai'i

Common Name	Scientific Name	Plant Part
Angelica	<i>Angelica</i> sp.	Shoot tips
Bamboo	Various genera	Shoot tips
Beans	Various genera	Shoot tips
Dropwort	<i>Oenanthe javanica</i>	Shoot tips
Mugwort	<i>Artemisia vulgaris</i>	Shoot tips
Noni	<i>Morinda citrifolia</i>	Immature fruit
Purslane	<i>Portulaca oleracea</i>	Shoot tips
Seaweed	Various genera	Shoot tips
Squash shoots	<i>Cucurbita</i> spp.	Shoot tips
Sweetpotato shoots	<i>Ipomoea batatas</i>	Shoot tips
Watercress	<i>Nasturtium officinale</i>	Shoot tips

plant material. Cut the shoot tips into 2- to 3-inch pieces (Fig. 2). Weigh plant parts before or after cutting, whichever is easier.

Step 3. Add brown sugar

Weigh out an amount of brown sugar equal to the weight of the plant material, and toss together in a bowl or large pan. Coat as much of the surface area of the plant material with sugar as possible to expedite the osmotic process and draw out the plant juices (Fig. 3).

Step 4. Pack the plant-material-and-brown-sugar mixture into a container

Select a clear glass or food-grade polyethylene (PE) plastic container (no lid necessary). Do not use metal, which will react with the solution. Pack the container tightly with the plant-material-and-brown-sugar mixture until full (Fig. 4). Cover the mouth of the container with a breathable material, such as muslin, heavy cheesecloth, or a towel, to allow

air exchange. Secure the cover (with string, rubber bands, etc.) to keep pests and other contaminants out (Fig. 5). Paper towels can be used but should be replaced if they become wet or torn. Store the covered container in a well-ventilated area away from artificial or natural light and extreme heat or cold. Do not refrigerate.

Step 5. Check the container after 24 hours and adjust the volume if necessary

In order for the fermentation process to occur properly, the volume of the plant-material-and-brown-sugar mixture should settle to $\frac{2}{3}$ of the container after 24 hours. If the container is too full, the microbes will not have enough air to properly ferment. Remove some of the plant material until the container is no more than $\frac{2}{3}$ full. If the container is less than $\frac{2}{3}$ full, add more of the mixture to prevent mold growth. Not all plants will settle in the same way, so it is important to check and adjust the volume after the first 24 hours.



Fig. 2. Cut plant material into 2- to 3-inch lengths.



Fig. 3. Add equal weight of brown sugar to cut plant material.

Step 6. Let the contents ferment undisturbed

The fermentation process is dependent on ambient temperature. Hawai'i's warmer, humid weather speeds up fermentation (3 to 5 days), while cool or cold periods slow the process. You will know that fermentation is occurring when bubbles start to form, which normally occurs on the second day. Ideally, fermentation should take no longer than 7 days, as the quality of FPJ appears to diminish thereafter. Fermentation is complete when 1) the plant material floats and the liquid settles at the bottom (note: if too much brown sugar was used, this separation is not distinct); 2) there is a light alcohol smell due to breakdown of chlorophyll; and 3) the liquid tastes sweet, not bitter.

Step 7. Separate the liquid from the solids

After fermentation is complete (3 to 7 days), separate the plant material from the liquid using

a colander or strainer. The spent plant material can be used as animal feed, or added to mixed compost (another input known as IMO#5). The liquid is Fermented Plant Juice (FPJ), which can be used immediately or stored in a loosely covered container.

Step 8. Store the FPJ properly.

Transfer the FPJ into a glass or food-grade polyethylene (PE) plastic container. The microorganisms in the solution are alive and continue to produce gases. **The lid must be kept loose or the container can explode.** As with all Korean Natural Farming inputs, each batch of KNF should be stored separately. They should be combined only when a solution is being mixed for immediate use.

For long-term storage, add an equal amount of brown sugar by weight to FPJ to prevent it from souring.



Fig. 4. Pack the plant material and brown sugar in a container until full.

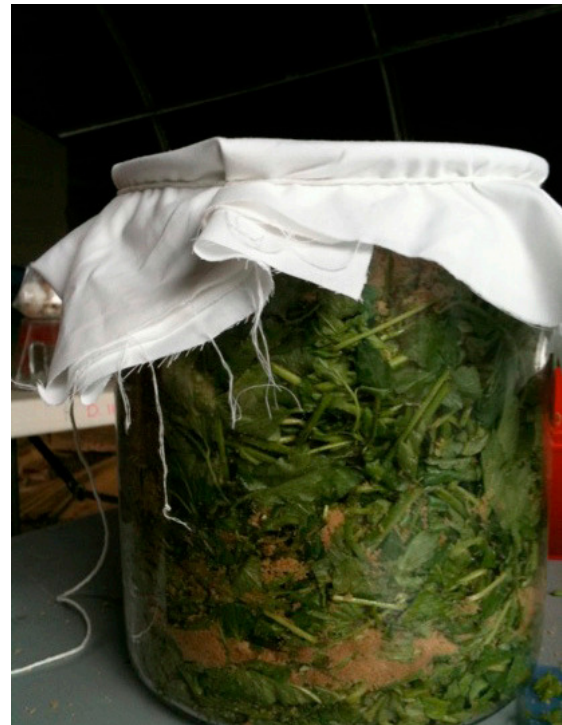


Fig. 5. Secure a breathable cover over the mouth of the container and store in a cool place.

How Is FPJ Used on Plants?

FPJ is diluted with water and applied as a soil drench or a foliar application directly onto plants. Traditionally, the plant material used in the fermentation process produces FPJ for specific phases of plant growth. Generally, use FPJ made from plant material at the same growth phase (vegetative or reproductive) as the plants that are to be treated.

- FPJ made from dropwort, mugwort, or bamboo shoots is applied from germination until early stages of plant growth.
- FPJ made from arrowroot or bamboo shoots is applied on vegetative growth (leafy) crops that need nitrogen (N).

- FPJ made from green (unripe) fruit is applied to plants that are just beginning to develop flower shoots and need phosphorus (P).
- Once plants reach the reproductive phase (flowering and fruiting), they require a lot of calcium (Ca). FPJ made from calcium-rich plants or FPJ that has been stored for over a year is applied at this stage.

Preparing and Applying FPJ

Dilute FPJ with water

It is best to use a mixture of old and newly made FPJ in your solutions. FPJ is generally used at a concentration of 1 part per 500 parts water (1:500) (see Tables 2a–2c). A more dilute solution is necessary (1:800 to 1:1,000) to

Table 2a. Preparation of 1:500 FPJ Solution

Water volume	Amount of FPJ (select ONE column only) for 1:500 dilution		
	Kitchen measuring utensils	Fluid ounces (fl oz)	Milliliters (ml)
½ gallon	¾ teaspoon (tsp)	0.13	4
1 gallon	1½ tsp	0.26	8
5 gallons	2½ tablespoons (Tbsp)	1.28	38
10 gallons	5 Tbsp	2.56	76
25 gallons	little more than ¾ cup	6.40	189
50 gallons	little more than 1½ cups	12.80	379

Table 2b. Preparation of 1:800 FPJ Solution

Water volume	Amount of FPJ (select ONE column only) for 1:800 dilution		
	Kitchen measuring utensils	Fluid ounces (fl oz)	Milliliters (ml)
½ gallon	½ teaspoon (tsp)	0.08	2.5
1 gallon	1 tsp	0.13	5
5 gallons	5 tsp	0.80	24
10 gallons	little less than ¼ cup	1.60	47
25 gallons	½ cup	4.00	118
50 gallons	1 cup	8.00	237

Table 2c. Preparation of 1:1,000 FPJ Solution

Water volume	Amount of FPJ (select ONE column only) for 1:1,000 dilution		
	Kitchen measuring utensils	Fluid ounces (fl oz)	Milliliters (ml)
½ gallon	⅓ teaspoon (tsp)	0.06	2
1 gallon	¾ tsp	0.13	4
5 gallons	1¼ tablespoons (Tbsp)	0.64	19
10 gallons	2½ Tbsp	1.28	38
25 gallons	little less than ½ cup	3.2	95
50 gallons	little more than ¾ cup	6.4	189

avoid damaging plants (leaf burn) under the following circumstances:

- more than three ingredients (a “cocktail” of different inputs applied at once) are being combined, or
- it is applied during hot weather, or
- FPJ that has been stored longer than a year and thus has become more concentrated is being used.

Apply FPJ once per week in the late afternoon, ideally an hour before sunset

The solution can be watered onto plants or into the soil, or it can be applied as a foliar spray. The nutrient solution is applied once per week and is adjusted as the plant passes through its life-cycle stages and vegetative and reproductive phases.

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Reference

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