

## **Making Fermented Plant Extract (FPE) by Sr. Glen**

It is best to use five different types of plants when making extract to ensure we get a well-rounded blend of benefits for the plants and the soil. The selection of plant varieties can and should vary from batch to batch when possible.

### **Making FPE is a simple process.**

1. First, collect your plant material early in the morning before the sun shines on them. Harvest young leaves that are growing quickly.
2. Without washing the leaves, cut leaves into 2 to 3 inch pieces and place them in a bucket. The goal is to have 1 gallon of cut up leaves when they are tightly packed.
3. Add enough molasses to the leaves in the bucket and mix together thoroughly so all leaves have a thin coating of molasses on them. A thin coat on the leaves creates the maximum amount of surface area for fermentation microbes to grow. The goal is to have a thin coat of molasses on all of the leaves without creating a “soup”. We do not want a soupy mixture.
4. After mixing them together thoroughly so each leaf has a thin coating, tightly pack the mixture into a clear glass or plastic container without a lid. An empty 3 liter coke bottle with the top cut off would be good. Once the container is full, cover it with a breathable fabric that allows good airflow but prevents insects from getting in. A piece of cloth draped over the top of the bottle and held in place with a rubber band is ideal. Then place the enclosed bottle in a sack. Tie the sack in such a way that the bottle cannot fall over inside the sack.
5. Tie the sack closed and hang the sack from the ceiling with string in an area without direct sunlight. Having the sack suspended from the ceiling provides good air circulation and prevents ants and other insects from entering.
6. After 24 hours, check the container and remove material if the volume hasn't naturally sunk down to about 3/4 of the container. That space is needed so the microbes have enough room and air to fully ferment.
7. Normally on the second day bubbles will start to form. That is your proof the fermentation process is working. In about seven days, the fermentation process should be finished. You will know because

bubbles have slowed and there is a light sweet alcohol aroma indicating the process worked.

8. Once the fermentation process has slowed, strain the solid parts away from the liquid and use the solids as chicken feed. The liquid is the FPE.
9. We can use the FPE immediately or store it in a glass or plastic container for a few weeks. Keep the lid loose so the gasses formed through further fermentation don't build up and cause the container to explode.

## **Application Rates**

Normally, the extract is diluted with water and used as a soil additive or foliar spray to add beneficial microbes for the plants.

When diluting the FPE in water, in the beginning it's usually best to add 1 part extract to 500 parts water for foliar sprays. That would be about 40 ml in a 20 liter spray tank. The best time to apply the mixture to leaves is an hour before sunset. We could experiment with a once a week application.

For applying to the soil a stronger solution can be used by adding 60 mL per spray tank. Two students could work together. One student sprays a squirt near each fruit tree and the other student covers it with a handful of mulch. In other words, the spray nozzle is nearly touching the ground so it sprays in only one small area with a narrow stream similar to a water pistol. Apply the spray approximately 1 foot away from the fruit tree and near to the irrigation drip line so the irrigation water keeps the microbes moist. The reason for putting a handful of mulch above the spray area is to keep the sun from drying out the area. This can be done anytime of the day and is best done during irrigation. Also just before a rain is an excellent time. The application could be done approximately each two weeks. Later we will inject the FPE into the irrigation lines as a way to save work but for our initial tests we will do it by hand.

We can use FPE with our seeds before planting them. Soak seeds for 3 hours or more before planting in water that includes a solution of one part extract to 50 parts water. For example 1 ml of FPE with 50 ml of water or 2 ml of FPE with 100 ml of water.

## Summary Notes

Because we want to use fast growing young leaves, that means making FPE during the drought is difficult except when using plants that are benefiting from irrigation.

Examples of fast growing plants would include Water spinach, Chaya, certain weeds, Mexican, Comfrey, Naci, Leucana, Tobaquito, Zacate, X, Maracuya, Piñon, Madreago, Morus, maybe Pito, Guama, Cablote and Indio desnuda.

If something seems to have gone wrong in the bottle while it is fermenting, for example mold growing or a bad odor, add more molasses to see if that cures the problem.

Always keep FPE out of direct sunlight and don't apply it during strong sunlight. Apply it to the leaves on cloudy days without strong sun or in the late afternoon. It can be applied to the soil by spraying directly in one area of the soil similar to injecting it into the soil and then covering the soil with a handful of mulch from the surrounding area to protect from the sun. For applying to the soil there needs to be moisture either from rain or from irrigation.

In addition to making FPE with young leaves, it can also be made with unripened fruit for spraying on fruit trees that are beginning to flower. For example green banana fruits could be processed to spray lemon trees that are beginning to flower. Green maracuya or mango fruit could be processed for spraying banana trees that are beginning to flower.