

4. **Aids in Seed Germination.** Dilute one part wood vinegar with 200 parts water then soak the seeds for 24 hours.

5. **As Pest Repellent or Deodorizer.** Dilute one part vinegar with 20 parts water and spray it to the plant or to the substrate in case of odor removal.

6. As Fungicide

- ◆ Effective as fungicide, eg. Grey Molds, etc.
- ◆ Enhances effects of fungicides when mixed (but not with copper-based fungicides)
- ◆ The ratio to be used: Wood vinegar: Water 1:200-500liters or 80 ml wood vinegar is to 16 liters of water

Mokusaku is a natural material thus the effect is not the same as chemical pesticide.

7. As Fertigation material

- ◆ Activate useful organisms
- ◆ It also controls nematode
- ◆ The ratio to be used: Wood vinegar: Water 1:10-20liters
- ◆ 1 liter diluted liquid /plant

It is important to use fertigation and improve your soil condition so that it will bring back the natural nutrients. However, we must also consider other activities in the soil. You must find out the reason of soil deterioration.

8. As Insecticides with Chili

- ◆ The ratio to be used: wood vinegar with chili: Water 1:200liters or 80 ml wood vinegar is to 16 liters water
- ◆ Concoction should be aged for 2-3 months

PROVEN EFFECTS OF WOOD VINEGAR TO BENGUET LOCAL FARMERS

- ◆ Harvesting period of pole beans became more frequent and the bean pod became more sugary compared with the harvest before using Mokusaku. The pods sprayed with Mokusaku were also darker in color. (Jeffrey Sotero–MAO, Tublay, Benguet)
- ◆ After spraying with Mokusaku to the beans, the leaves became robust and thicker. The larvae of the pests were eliminated and can control bean rust. (Stember Ngaya-an, Magsasaka Siyentista, Kibungan, Benguet)
- ◆ After application of Mokusako, the anthurium plant grew faster and the leaves were more vigorous and green. The leaves and flowers were shiny. The emergence of suckers were enhanced. The decomposition of compost when applied with it became faster. (Shirley Palao-ay, Anthurium grower, Tuba, Benguet)

References:

Farmers in Benguet Practice Savers Technology

December 2011. retrieved from <http://www.jaec.org/jaec/english/4.pdf>

Wood Vinegar for Organic Vegetable and Livestock

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WOOD VINEGAR 'MOKUSAKU'



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What is Wood Vinegar?

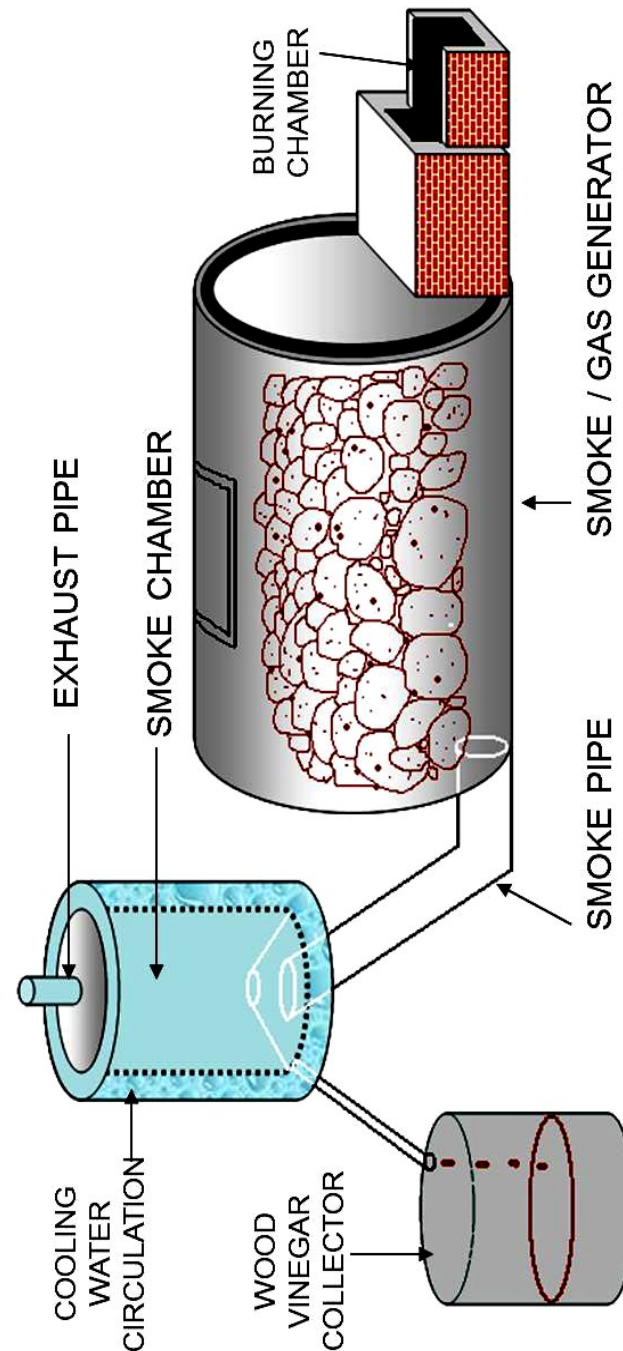
Wood vinegar or popularly known as “mokusaku,” is a pyrolygneous acid obtained from organic materials such as wood, coconut shell, bamboo, grass, and other plants after being heated in a chamber.

When these organic materials are heated, their oils, juices and other liquid contents evaporate as vapor or steam (gas, smoke). The steam passes through a tube (cooling chamber) where it will be allowed to cool into liquid (condensation process). From the tube, this liquid is collected in a container. This is allowed to settle for 3-6 months before it can be used.

Studies show that wood vinegar improves soil quality, eliminates pests and controls plant growth. It enhances the growth of roots, stems, tubers, leaves, flowers, and fruits.

At recommended rates, wood vinegar is safe to living matters in the food chain, especially, insects that help pollinate plants. However, it is slightly toxic to fish and may retard plant growth at excessive concentration.

Japanese farmers use wood vinegar for various purposes like; as foliar spray for grey molds, as insecticides (mixed with hot pepper), enhancers for composts-making, for soil improvement (mixed with charcoal) and as feed supplement or additives for livestock animals.



ORGANIC SUBSTANCES CONTAINED IN WOOD VINEGAR

Mokusaku is composed of a lot of organic chemical substances. Studies in Japan have shown that there could be more than 300 chemical substances. However, contents of these substances in Mokusaku are dependent on the materials to be heated as well as the burning/carbonization process and the timing of collection.

The following are some of its contents:

- ✦ Organic acids (formic acid, acetic acid, propionic acid, butyric acid, etc.)
- ✦ Phenol groups
- ✦ Carbonyl groups (formaldehyde, etc.)
- ✦ Alcohol (ethanol, methanol, etc)
- ✦ Neutral materials (levoglucosan, acetol, maltol, etc.)
- ✦ Base (acidic substances, ammonia, methylamine, dimethylamine, etc.)

Uses of Wood Vinegar

1. **As Soil Enhancer.** Dilute wood vinegar with water (1:200 ratio-1 part wood vinegar and 200 part water) and sprinkle it to the soil before planting. Application is one liter solution for every square meter of planting area.
2. **As Compost Activator.** Dilute one part wood vinegar with 50 parts water and sprinkle to composting materials. Application rate is 50 liters solution to one compost pile.
3. **As Fertilizer.** Dilute one part wood vinegar with 200 parts water and spray it to leaves once a month. Dilution ratio can be changed to 300 parts water for the succeeding applications.