

Fresh leaf fertilizer

- Pick a handful (about 100 gm) of *Vernonia* leaves
- Chop them into small pieces
- Take a handful of animal manure (cow, goat, chicken, etc.) and mix with chopped leaves
- Introduce the mixture into the planting holes for beans or vegetables
- Cover the mixture with a thin layer of soil (about 2-3 cm)
- Sow bean seed or other grain a day later or vegetable seedlings after 3-4 days.



***Vernonia* sp.**

Use *Vernonia* spp. for increased production



***Vernonia* sp.**

NOTE:

- Other plants including *Tithonia* sp., *Pycnostachys* spp., *Tetradenia* spp. and other *Vernonia* spp. can be used as source of insecticides and fertilizers a similar manner
- These botanicals are relatively safe to human, the environment and various natural enemies to common crop pests
- They are also easily available at little or no cost and can be established by farmers.

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Introduction

Vernonia spp. are common shrubs in most valleys, fallows and uncultivated bushland. Collaborative research results generated by Lushoto district farmers, researchers and extensionists in north eastern Tanzania showed that *Vernonia* spp. leaves can be used as a source of insecticide for bean and other crop pests as well as green manure for soil fertility.

Field insect pest control

- Pick 3 kg of mature *Vernonia* spp. leaves
- Chop the leaves into small pieces
- Mix the chopped leaves with 3 litres of water
- Leave the mixture to stand for 10-12 hours
- Filter the mixture using muslin cloth
- Mix the filtrate with 10 gm of powder soap
- Spray the final mixture on the crop in the field.

Storage pest control

- Pick 1 kg of mature *Vernonia* spp. leaves
- Dry them under cool, dry and shaded conditions
- Pound or grind to obtain a fine powder
- Carefully mix 1 kg of the fine powder with 100 kg of dry beans or other crop grains
- Secure the grain in appropriate containers for storage.



A woman pounding dry *Vernonia* leaves



A man mixing *Vernonia* leaf powder with dry bean seed

Improvement in soil nutrient

- Collaborative research by Lushoto farmers and scientist at ARI Mlingano have shown that *Vernonia* leaves can enrich the soil to levels comparable with the commercial inorganic fertilizer NPK (i.e., At % levels of 3.6, 0.25, 4.7)

- Farmers also experimented with two methods for using *Vernonia* leaves in soil fertility – a liquid mixture and chopped leaves.

Use of *Vernonia* leaves as a liquid fertilizer

- Pick 3 kg of fresh mature leaves and chop them into small pieces
- Mix with 10 litres of clean water and soak for 7-10 days
- Add 10 litres of clean water
- Take one cupful (100-150 ml) of the mixture and sprinkle on the soil around the plant's stem
- A thin layer of soil cover will help to preserve the fertilizer
- Use plastic vessels.



Preparation of liquid fertilizer