

Tephrosia vogelii for insect control and green manure

Tuesday, 22 July 2008

From AZ p. 203

Several members of our network wrote us about this plant for different reasons.



Tephrosia vogelii

Beth Doerr wrote from Malawi, "I planted several rows of leucaena trees on the edges of terraces, for green manure and erosion control. They are doing well and beginning to flower. I've found a shrub that seems to be much better though, fish bean or Tephrosia vogelii. It produces an incredible amount of leaf matter, grows very quickly, and is very easy to establish. I planted seeds about 2 feet apart and now, 7 months later, the plants are almost a solid wall. They are not used as fodder.

"I have been very impressed with fish bean as an insecticide. Some of my students told me they had used the leaves to kill caterpillars, so we tried it. It killed every caterpillar overnight. It was incredible since most natural insecticides don't seem to work that quickly. We did an experiment on an okra crop that was full of aphids, using Malathion, tephrosia bean extract, soap (1 teaspoon per liter) and a tephrosia/soap mixture. The latter had the best results, tephrosia and Malathion were about

the same, and soap was least effective. We've not been able to use neem because the trees planted in 1992 keep dying back and then regrowing. So I am encouraging students to plant tephrosia since it is much easier to establish here and can be used as a green manure as well."

Emmanuel Soko in Tanzania is an extensionist that was working with Fr. Rupper, who frequently wrote and shared seeds. Emmanuel shared how tephrosia is used for insect control in grain storage. "Take fresh leaves and dry them under the sun. Grind the dried leaves into a powder. Mix 100 grams of powder with 100 kg of maize to control maize weevils and the larger grain borer; with 100 kg of beans to control the bean bruchids. The chemical is effective up to three months. After that time the process must be repeated.

"The plant has many other uses. To control ticks, lice and flies, animals (cattle, sheep, goats, pets) are washed with the extract of the plant. To make the extract, fresh leaves and branches are pounded in a mortar. This is diluted with five times that volume of water before applying to the animals.

"To make an insecticide, allow the above mixture to soak overnight or boil it for 30 minutes. Add a bit of soap to help the spray stick to the leaves. It can be used with garden vegetables, fruits and field crops, to control termites, ants, beetles, aphids, cutworms, various bugs and weevils, stalk borers, flies etc.

"In the evening, the walls of the room, especially corners, are beaten with fresh tephrosia branches to repel mosquitoes, lice, ticks, cockroaches, etc. It is fed to animals for intestinal problems."

Roland Lesseps sent a copy of a fact sheet written by his colleague Andy McDavid at the Kasisi Agricultural Training Center in Zambia, from which a few excerpts follow.

"It has been used as a fish poison for hundreds of years and an insecticide for over a hundred." "Cattle deaths have been reported as a result of drinking water of poisoned fish ponds. Also, reports have been made from one village of people getting sick after eating fish poisoned with the extract. I do not advise its use as a fish poison.

"The shrub may grow as rapidly as 2-3 meters in 7 months. The compound leaves contain the highest concentration of rotenoids, which are responsible for its insecticidal effectiveness. ...Its compounds are effective against a number of different pests (tested at least 90% effective against termites, citrus aphids, red spider mites). They break down in about 7 days (2-3 days in bright sunlight)." Seeds should "be soaked in water for about 24 hours for good germination (about 90%). Plant about 1 meter apart." If very large numbers are planted, use 35,000 seeds per ha for greatest leaf yield.

"In harvesting, only the leaves need to be taken off the shrub. ... If removed carefully, the shrub will continue to produce leaves for...extract or mulch. The most effective concentration for killing insects was found to be 20 g of leaves for every 100 ml of water. If a scale is not available, take the amount of leaves equal to the weight of an empty 300 ml coke bottle, then add 7 coke bottles full of water. ...The crushing of leaves does not need to be done perfectly; a plastic feed bag and large rock can be used." After soaking for 2 hours (NOT in direct sunlight) filter the suspension through a cloth and use directly in

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"It is important that the spray have contact with the pest. If the pest is underneath the leaves, be sure to actually hit the pests. ...If all the spray is not used immediately, it will still be approximately 70% effective 24 hours later, IF kept out of direct sunlight." Beyond that its potency drops quickly. The "used" leaves may be reused for a second extract. Tests have not determined concentrations to use but have shown that effective chemicals are left. "The leaves contain an antifeedant, so termites will not eat it. In areas of heavy termite infestation this mulch can be very helpful."

ECHO has trial packets of tephrosia available.

Samuel Ratnam in Singapore sent a technical note on *Tephrosia vogelii*. "The tree has a resemblance to *Tephrosia candida*. However, its pods are larger, longer and very hairy. ... After 5-6 months of growth, the average green material per hectare is about 27 tons. The yield of nitrogen is 112 kg per ha." He adds, "It is used there mainly as a bush green manure in rubber and oil palm plantations and as a shade tree for young tea, cocoa, coffee, and rubber."



Tephrosia candida

Steve Kennedy in Nepal grew the seeds we sent him and reported back to us: "The tephrosia plants are about a year old and are three meters high. We had no insect problems until flowering, but now about 10% of the flowers have been attacked by aphids. Apparently the flowers do not have the insecticidal compounds that are found in the leaves. I have mixed dried and pounded leaves with water and used as an insect spray on ants and various kinds of caterpillars, with good effect. Caterpillars died after some hours. Spraying or even scattering dried leaves across the path of ants coming into the house stopped them for a few

days. I sprayed the tephrosia solution on the tephrosia flowers and two days later had no more aphids. Other expatriates and Nepali co-workers have expressed an interest in planting and using this species in their gardens."