

## Tithonia diversifolia as a termite repellent for protecting fruit trees in Central African Republic

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[Eds: A few years ago, Tim Watkins spent time in the Central African Republic working with a tropical fruit tree project. While there, he sent ECHO the following information about using *Tithonia diversifolia* as a termite repellent. *T. diversifolia* (also mentioned in the next article) is a fast-growing shrub with dark green leaves and bright yellow sunflower-like blossoms (Figure 4). It is commonly seen along roadsides in Africa.]



Figure 4: *Tithonia diversifolia*.

We read a recipe reported in an ILEIA Magazine by a Kenyan farmer. The ILEIA article read, "I had eight ant hills on my farm and the underground termites destroyed my crops and trees. I pounded together 4 kilograms of fresh *Tithonia diversifolia* leaves and 4 kilograms of fresh *Melia azedarach* leaves. I

immersed this mixture in 20 litres of water and left it to ferment for four days. I then poured the fermented mixture into the opening of each of the eight termite nests. The solution was very effective and controlled most types of underground termites. The good thing is that this mixture is cheap. I do not have to repeat the treatment until new termites move onto my farm. When they do they'll get the same treatment. However, this method only works on underground termites."

We began with this recipe, but we had difficulty obtaining the *Melia azedarach* leaves. So we tried the treatment using only *Tithonia* and it seemed to be effective on its own. We began by harvesting a few small cartloads of fresh leaves, then chopped and pounded the leaves. (The workers preferred to pound them on the cistern, but I thought it was a waste of time and not good for the cistern, so eventually we just chopped the leaves briefly). The rest of the steps went as follows.

First, we filled half a barrel with chopped/pounded leaves and soft stems (avoid hard/woody stems). Then we filled the barrel with water and used a board with a rock on it to hold all the plant material down in the water. We allowed that to sit for about 4 days in the shade (we never did it in the sun—I am not sure if it matters or not). After four days the *Tithonia* began to smell very strong and very bad. It also looked very black and mucky. We then poured the black liquid and muck around the bases of trees that had termites or that were known to be susceptible to termites. We had constant problems with termites attacking Inga, Terminalia, Macadamia, *Dacryodes edulis*, and guavas. We regularly treated our problem-prone trees and then any others that showed signs of termites.

Although we were not careful to record how long the treatment was effective, I and the other staff all felt that it was quite effective. Trees that were damaged by termites were free of them for several weeks, perhaps depending on the rains. We began doing this during the rainy season, which probably reduced the duration of the effect considerably. We felt that we had repelled termites from most of our problem-prone trees. We used *Tithonia* as a spot-treatment whenever we saw termites affecting a tree.

We did observe some adverse effects of *Tithonia*. When the blackened leaves and muck were mulched around the base of a tree, touching the tree, it seemed to rot the bark (probably no differently than with most any mulch). So, we began to be careful about not letting the muck touch the bark of the tree. We still poured the black liquid around the base of the tree but were more careful about the muck.

Our recipe in summary:

1. Fill to half a 50-gallon drum with fresh, chopped *Tithonia* leaves and stems (soft, new growth)
2. Fill to level with water
3. Cover, place weight to hold material in the water
4. Allow to ferment 4 days or until vile smelling
5. Pour liquid and black muck around bases of trees, or into termite mounds
6. For trees, take care to keep muck from touching tree, as it may cause the bark to rot (as will any thick mulch or compost touching the bark for many tree species)

Depending on the rains, the treatment may be effective for about 1 month. With heavy rains it is best to treat trees more frequently.