

Wild Sunflowers Enrich Fertility of African Farms

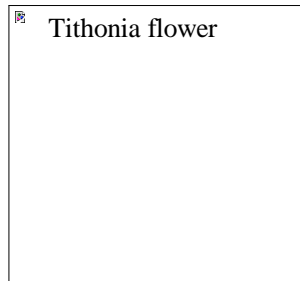
By Jennifer Wanjiru

NAIROBI, Kenya, February 18, 2003 (ENS) - As African countries grapple with dwindling crop yields and famine, some farmers in east Africa have discovered a new way to replenish soil fertility and increase farm yields.

Eunice Gichiku Kinyua, a 40 year old Kenya farmer, is among hundreds of farmers in rural Kenya who have discovered that the wild sunflower (*Tithonia diversifolia*) replenishes soil fertility and helps increase crop yields. The use of tithonia, also known as Mexican sunflower, to replenish soil fertility and as a substitute for fertilizers in this east African nation has been the focus of regional research institutions and is the latest challenge for extension officers.

"It is a new discovery," smiles Kinyua on her six acre farm.

Soil fertility depletion on smallholder farms has for long been cited as the root cause of declining per capita food production in Africa. Although many of the farming regions have adequate rainfall, impoverished soils with low levels of phosphorous, nitrogen and to a lesser extent potassium has been a major constraint to agricultural development.



Tithonia flower

Wild sunflower (*Tithonia diversifolia*) (Photo courtesy [UCLA's Mildred E. Mathias Botanical Garden](#))

"The tithonia shrub is changing lives of farmers in the region as it replenishes soil fertility," says Richard Maina, an

extension officer with Kenya's National Agriculture and Livestock Extension Programme (NALEP), which is spearheading the introduction of tithonia to rural farmers. "The overall goal is to improve food security in the rural areas."

Years ago, say agricultural extension officers in eastern Kenya where tithonia naturally grows, the plant was perceived an enemy to the farmer for its ability to outgrow and choke young plants. "Farmers in the area had been seeing the plant as a menace and would clear it from their farms before planting season," says Maina.

Researchers now say that the possibility of using locally available plants with high biomass transfer is a blessing for many African farmers whose lands had become depleted due to continuous cropping and erosion. Continuous cropping leads to declining soil fertility and nutrient losses through harvest, soil erosion and leaching.

"Tithonia grows naturally, and if its potential is tapped, soil infertility problem would be halfway solved," says Maina.

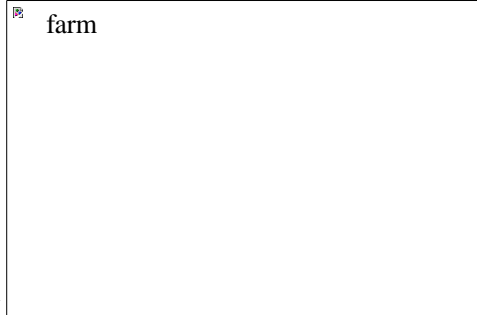
Over the years some rural communities in Kenya used tithonia as a remedy for stomach ailments. But its potential to replenish soil fertility was unknown.

Officers of NALEP, an extension program within Kenya's ministry of Agriculture and Rural Development, funded by the Swedish International Development Agency, are now touring the countryside organizing farmers' groups in areas where tithonia is found to handle the implementation of the project.

Also collaborating on the project are the Kenya Agricultural Research Institute, the Kenya Forestry Research Institute and the International Centre for Research in Agroforestry.

Research scientists say the tithonia plant contains 80 percent more phosphorus than legumes. They say it contains enough nitrogen and potassium to promote crop growth, and they are asking stakeholders in the agricultural sector to help promote the use of tithonia as an alternative to chemical fertilizers.

Sorghum farm in drought prone eastern Kenya
(Photo courtesy ICRISAT)



Research recently carried in western Kenya indicates that improved fallows, especially in conjunction with high doses of phosphorous, are not only effective in increasing maize yields, but are also financially attractive. The researchers demonstrated that an increase in farm income of US\$457 per hectare can be achieved when tithonia is used.

Although experiments with tithonia started in 1999, it is only recently that the encouraging results permitted the researchers to introduce the plant's benefits to farmers.

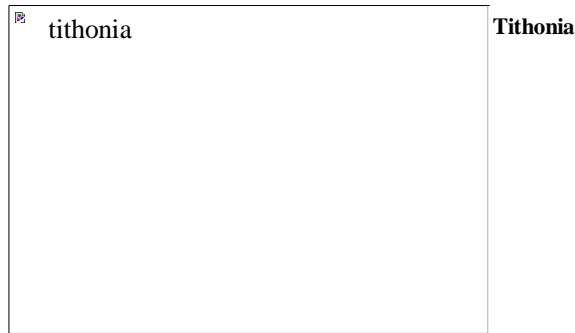
"Tithonia produces a lot of biomass and contains high amounts of nitrogen and considerable amounts of other nutrients," says Maina.

The use of tithonia was introduced to farmers in the eastern Kenya district of Embu following a farmers' consultative meeting in June 2000. "We are still getting more farmers eager to tap this knowledge," says Mary Nduru, the Embu District Agricultural Officer. "It is a unique experiment and we hope that in a few years we will see drastic changes in the local farms."

Nduru says one factor important to the success of

these experiments is the capacity of communities and farmers groups to organize themselves and provide necessary support to facilitate the entry of government and other development agencies.

Patrick Mugo, a 47 year old local farmer, is experimenting with the use of tithonia on sweet potatoes, and he has set aside a portion of his two acre farm for that purpose. "I want to see how it works compared to cow dung manure," he says.



diversifolia growing as a tall shrub (Photo courtesy [NDSU Extension](#))

Initially in areas where tithonia is found, farmers used it on fences or on ridges to check surface runoffs, but they were unaware of its potential to enhance soil fertility.

"Research in this area has shown that depletion of soil fertility is the root cause of poverty and reduced food production," says Njuguna, an extension officer with NALEP. "If tithonia proves to be a success, then food production in this area will stabilize."

The change to tithonia had its own doubting Thomases. "I was one of the first farmers here to use Tithonia as a biomass, but my fellow farmers were reluctant because they still saw it as a weed. But with increased yields in my farm they are now turning to it," says Mugo, a father of two.

Besides being used as a substitute for fertilizer, the tithonia plant is still used as firewood or as animal feed. "We chop the soft tissue and mix it with other animal feeds", says Mugo.

Researchers in the region say the ability of tithonia to decompose quickly makes it the best way to replenish soil fertility. According to a recent research by Kenya Agricultural Research Institute the concentration of nutrients in tithonia is highest in young plants and before the plant flowers.

In western Kenya, the Kenya Agricultural Research Institute experiments with tithonia have shown a dramatic improvement in crop yield on 46 farms where the yields of green beans increased when the biomass was applied.

"Farmers actually need to be taught that some solutions to their problems can actually be found within the farms themselves," says the Embu district livestock and agriculture officer Nduru.

The use of tithonia is a new initiative that promotes sustainable development in Africa, and the Kenya experiment will certainly be replicated in other rural areas of the continent.