

## Tithonia diversifolia

(Hemsley) A. Gray

Asteraceae

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### LOCAL NAMES

English (Tree marigold, tithonia, Mexican sunflower); Indonesian (kembang mbulan, harsaga); Javanese (kembang mbulan); Spanish (jalacate, Guasmara); Thai (thantawan-nu, daoruang-yipun, benchamat-nam)

### BOTANIC DESCRIPTION

*Tithonia diversifolia* is a woody herb or succulent (scandent) shrub 1.2-3 m tall.

Leaves opposite or alternate 3- (max. 5) lobed, base attenuate or decurrent, apex acute or acuminate, margin crenate, 5-17 x 3.5-12 cm, densely pubescent beneath; venation palmate; occasionally the upper leaves unlobed.

Florets yellow, rays 3-6 cm x 5-18 mm. Heads solitary on a peduncle 6-13 cm long. Each mature stem may bear several flowers at the top of the branches.

The specific name 'diversifolia' means 'separated leaves', from the Latin 'diversus' (divergent) and 'folium' (leaf).

### BIOLOGY

The plant flowers and produces seeds throughout the year. The light-weight seeds can easily be dispersed by wind, water and animals.



Wild sunflower planted in hedgerows near Kisumu, W. Kenya. (Griffie P.)



Close-up of flowers (Anthony Simons)

**ECOLOGY**

T. diversifolia is a composite shrub common on field boundaries in eastern Africa. In Kenya it is found in Western and Central Provinces as well as in coastal regions and parts of the Rift Valley. It is moderately resistant to drought.

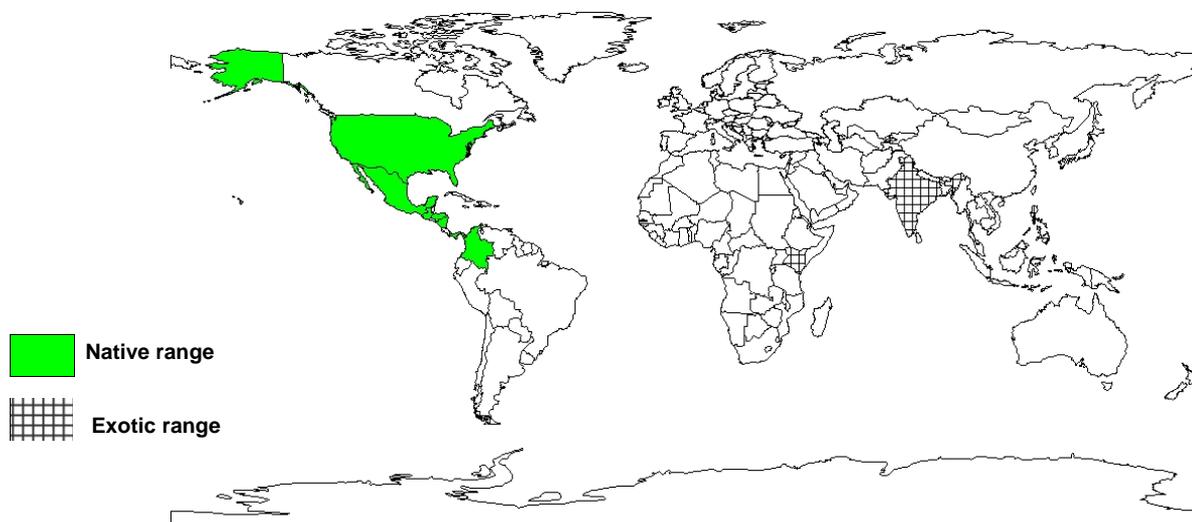
**BIOPHYSICAL LIMITS**

Altitude: 550-1 950 m, Mean annual temperature: 15-31 deg. C, Mean annual rainfall: 1 000-2 000 mm

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Colombia, Guatemala, Honduras, Mexico, Nicaragua, Panama, US, Zanzibar

Exotic: India, Kenya, Philippines



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

**PRODUCTS**

**Fodder:** A suitable species for fodder for cows and goats. The leaves, soft branches and even the plant's yellow flowers are eaten. *T. diversifolia* has a high nutritive-quality index.

**Fuel:** *Tithonia* provides farmers with firewood.

**Medicine:** An infusion of leaves is used as a medicine for constipation, stomach pains, indigestion, sore throat and liver pains. The leaves should be ground into small pieces, mixed with water, and then drunk.

**Other products:** Biomass from the existing locally available shrubs of *T. diversifolia* that commonly grow on field and farm boundaries might be a more economic source of nutrients for crops than the biomass from planted trees.

**SERVICES**

**Soil improver:** Crops such as maize respond well when leaves and cuttings are applied at the rate of 1 t/ha, but best results are obtained with 5 t/ha of leafy dry matter. This is equivalent to about 159 kg N, 15 kg P, 161 kg K, 100 kg Ca and 15 kg Mn per hectare. Yields of kale, French beans, tomatoes and Napier grass all increased when these crops were planted with *T. diversifolia*.

**Ornamental:** In Kenya, 1st planted as an ornamental plant.

**Boundary or barrier or support:** *Tithonia* is used for live fencing and boundary demarcation.

**Intercropping:** *Tithonia* has a positive effect on crop yields.

**TREE MANAGEMENT**

Tithonia is a fast-growing species.

**GERMPLASM MANAGEMENT**

Seed storage behaviour is orthodox; the oldest collection is 8 years old.

**FURTHER READING**

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**SUGGESTED CITATION**

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