**Family:** Solanaceae  
**Taxon:** Solanum aethiopicum  
**Synonym:** Solanum gilo Raddi  
Solanum integrifolium Poir.  
Solanum naumannii Engl.  
Solanum pierreanum Pailleux & Bois  
Solanum sudanense Hammerstein  
Solanum zuccagnianum Dunal

**Common Name:** Pumpkin on a Stick  
Chinese scarlet eggplant  
tomato-fruit eggplant  
gilo  
kumba

---

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Status</th>
<th>Assessor: Chuck Chimera</th>
<th>Data Entry Person: Chuck Chimera</th>
<th>Designation: Low Risk</th>
<th>WRA Score 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 Is the species highly domesticated?</td>
<td>y=-3, n=0</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102 Has the species become naturalized where grown?</td>
<td>y=1, n=-1</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103 Does the species have weedy races?</td>
<td>y=1, n=-1</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201 Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute &quot;wet tropical&quot; for &quot;tropical or subtropical&quot;</td>
<td>(0-low; 1-intermediate; 2-high) (See Appendix 2)</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202 Quality of climate match data</td>
<td>(0-low; 1-intermediate; 2-high) (See Appendix 2)</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>203 Broad climate suitability (environmental versatility)</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>204 Native or naturalized in regions with tropical or subtropical climates</td>
<td>y=1, n=0</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>205 Does the species have a history of repeated introductions outside its natural range?</td>
<td>y=-2, ?=-1, n=0</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>301 Naturalized beyond native range</td>
<td>y = 1*multiplier (see Appendix 2), n= question 205</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>302 Garden/amenity/disturbance weed</td>
<td>n=0, y = 1*multiplier (see Appendix 2)</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>303 Agricultural/forestry/horticultural weed</td>
<td>n=0, y = 2*multiplier (see Appendix 2)</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>304 Environmental weed</td>
<td>n=0, y = 2*multiplier (see Appendix 2)</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>305 Congeneric weed</td>
<td>n=0, y = 1*multiplier (see Appendix 2)</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401 Produces spines, thorns or burrs</td>
<td>y=1, n=0</td>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>402 Allelopathic</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403 Parasitic</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>404 Unpalatable to grazing animals</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>405 Toxic to animals</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>406 Host for recognized pests and pathogens</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>407 Causes allergies or is otherwise toxic to humans</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>408 Creates a fire hazard in natural ecosystems</td>
<td>y=1, n=0</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>409</td>
<td>Is a shade tolerant plant at some stage of its life cycle</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>411</td>
<td>Climbing or smothering growth habit</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>412</td>
<td>Forms dense thickets</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>501</td>
<td>Aquatic</td>
<td>y=5, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>502</td>
<td>Grass</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>Nitrogen fixing woody plant</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Evidence of substantial reproductive failure in native habitat</td>
<td>y=1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>Produces viable seed</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>603</td>
<td>Hybridizes naturally</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>604</td>
<td>Self-compatible or apomictic</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>605</td>
<td>Requires specialist pollinators</td>
<td>y=-1, n=0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>606</td>
<td>Reproduction by vegetative fragmentation</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>607</td>
<td>Minimum generative time (years)</td>
<td>1 year = 1, 2 or 3 years = 0, 4+ years = -1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>701</td>
<td>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>702</td>
<td>Propagules dispersed intentionally by people</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>703</td>
<td>Propagules likely to disperse as a produce contaminant</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>704</td>
<td>Propagules adapted to wind dispersal</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>705</td>
<td>Propagules water dispersed</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>706</td>
<td>Propagules bird dispersed</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>707</td>
<td>Propagules dispersed by other animals (externally)</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>708</td>
<td>Propagules survive passage through the gut</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>801</td>
<td>Prolific seed production (&gt;1000/m2)</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>802</td>
<td>Evidence that a persistent propagule bank is formed (&gt;1 yr)</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>803</td>
<td>Well controlled by herbicides</td>
<td>y=-1, n=1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>804</td>
<td>Tolerates, or benefits from, mutilation, cultivation, or fire</td>
<td>y=1, n=-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>805</td>
<td>Effective natural enemies present locally (e.g. introduced biocontrol agents)</td>
<td>y=-1, n=1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Designation:** L  
**WRA Score:** 4
Supporting Data:


[Is the species highly domesticated? Yes] "Biosystematic studies have shown that all the African taxa of Solanum section Oliganthes series Aethiopica, namely Solanum gilo (including S. olivare), Solanum zuccagnianum (= S. aethiopicum L. sensu Bitter), Solanum aethiopicum L., and Solanum aethiopicum var. aculeatum (= S. integrifolium auct. Non Poir.), comprise a single species. These crop plants form a continuum of interfertile populations; human preferences have selected nodes on non-Linnaean names under Solanum aethiopicum..."


[Is the species highly domesticated? Yes] "Solanum aethiopicum was domesticated from the wild Solanum anguivi Lam., via the semi-domesticated Solanum distichum Schumach. & Thonn."


[Has the species become naturalized where grown? Yes] "Distribution: Naturalized in Madagascar"


[Has the species become naturalized where grown? Yes] "Solanum aethiopicum is a tropical crop with optimum daytime temperature of 25-30°C and night temperatures of 20-27°C."


[Does the species have weedy races? No evidence] "The species is highly domesticated, with no wild populations identified."


[Species suited to tropical or subtropical climate(s) 2-high] "Solanum aethiopicum is grown throughout tropical Africa and South America (mainly Brazil) and occasionally elsewhere, e.g. in southernmost France and Italy."


[Quality of climate match data 2-high] "Solanum aethiopicum is grown throughout tropical Africa and South America (mainly Brazil) and occasionally elsewhere, e.g. in southernmost France and Italy."


[Broad climate suitability (environmental versatility)? No] "None of these cultivar-groups survive cold or very wet conditions. Waterlogging is not tolerated. Some tolerance of irrigation-induced salinity is reported from Senegal."


[Broad climate suitability (environmental versatility)? No] "Solanum aethiopicum is a tropical crop with optimum daytime temperature of 25-30°C and night temperatures of 20-27°C."


[Native or naturalized in regions with tropical or subtropical climates? Yes] "Solanum aethiopicum is grown throughout tropical Africa and South America (mainly Brazil) and occasionally elsewhere, e.g. in southernmost France and Italy."


[Does the species have a history of repeated introductions outside its natural range? Yes] "Solanum aethiopicum is widely cultivated in Africa for its glabrous leaves, which are cooked like spinach, and it has small fruits. Solanum gilo has hairy and sometimes prickly leaves but is commonly grown in Africa and also South America for its large fruits, which are cooked or eaten raw."


[Does the species have a history of repeated introductions outside its natural range? Yes] "These plants were domesticated in west Africa (Lester & Niakan, 1986), and many forms and related wild "species" exist across the African continent, including the ribbed-fruited forms seen on Madagascar. As there appears to be no series of wild associates in Madagascar, these species are presumed to have been introduced from Africa, where many similar forms are found. Both species are used medicinally and sometimes as food. In Africa, fruits and leaves are eaten, and many wild stocks are used for medicines."


[Does the species have a history of repeated introductions outside its natural range? Yes] "Cultivated in Henan (Song Xian) and Yunnan (Kunming Shi and Xishuangbanna)" [China]

[Does the species have a history of repeated introductions outside its natural range? Yes] “Vegetables cultivated very commonly throughout tropical Africa, introduced to Brazil with the slave trade, and also found rarely in Spain, Italy, Georgia and India.”


[Naturalized beyond native range? Possibly Japan] “Table 1 Alien species recognized to be established in Japan or found in the Japanese wild (as of October 27, 2004)” [includes S. integrifolium]


[Naturalized beyond native range? Yes] "Distribution: Naturalized in Madagascar"


[Environmental weed? No] No evidence


[Congeneric weed? Yes] "Tropical soda apple, wetland nightshade and turkey berry are currently recognized as three of Florida’s most invasive nonnative plant species (FLDCAS 1999, FLEPPC 1999, Langeland 2001). Although it is unclear why these exotic solanaceous plants have become weeds, the lack of host specific natural enemies in Florida (the introduced range) may have afforded these plants a competitive advantage over native species (Cuda et al. 2002)."


[Congeneric weed? Yes] "Seed is sometimes broadcast together with amaranths (Amaranthus spp.) and spider plant (Cleome gynandra L.), where the latter two crops are harvested early by uprooting and the plants of Solanum aethiopicum Shum Group remain." [No evidence, despite widespread cultivation]
**Designation = Low Risk**

**WRA Score = 4**

<table>
<thead>
<tr>
<th>Page</th>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>404</td>
<td>2004. Grubbenn, G.J.H.. Vegetables. Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>[Unpalatable to grazing animals? Unknown] &quot;branches and leaves with or without prickles and stellate hairs.&quot; [Although foliage is palatable to humans, presence of prickles may deter browsing from animals]</td>
</tr>
<tr>
<td>406</td>
<td>2005. Plants For A Future Database. Solanum aethiopicum. <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Solanum+aethiopicum">http://www.pfaf.org/user/Plant.aspx?LatinName=Solanum+aethiopicum</a></td>
<td>[Host for recognized pests and pathogens? Potentially] &quot;Solanum aethiopicum is susceptible to several diseases and pests, although much less than eggplant. The most serious soil-borne diseases are wilt caused by Ralstonia solanacearum, collar rot and wilting caused by Sclerotina rolfsii and Verticillium dahliae, and root-know nematodes…&quot;</td>
</tr>
<tr>
<td>407</td>
<td>2005. Plants For A Future Database. Solanum aethiopicum. <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Solanum+aethiopicum">http://www.pfaf.org/user/Plant.aspx?LatinName=Solanum+aethiopicum</a></td>
<td>[Causes allergies or is otherwise toxic to humans? No] &quot;It is one of the leading vegetables of tropical Africa. In the humid zone of west Africa it is mainly grown for its immature fruits (garden egg), in the savanna area frequently for both its leaves and immature fruits…and in East Africa, especially Uganda, mainly as a leaf vegetable…The leaves contain oxalate and alkaloids, e.g. solasodine, which has glycoscorticoic effects. Their concentration is reduced by cooking.&quot; [No evidence despite widespread use as a food]</td>
</tr>
<tr>
<td>413</td>
<td>2004. Grubbenn, G.J.H.. Vegetables. Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>[Climbing or smothering growth habit? No] &quot;Shrub to perennial or annual herb, up to 200 cm tall, often much-branched; root system extending both vertically and laterally…&quot;</td>
</tr>
<tr>
<td>419</td>
<td>2004. Grubbenn, G.J.H.. Vegetables. Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] &quot;Shrub to perennial or annual herb, up to 200 cm tall, often much-branched; root system extending both vertically and laterally;&quot;</td>
</tr>
</tbody>
</table>
Solanum aethiopicum (Solanaceae)


[Evidence of substantial reproductive failure in native habitat? No] No evidence


[Produces viable seed? Yes] "Fruit a globose to depressed globose, ellipsoid, ovoid or fusiform berry 1-6 cm long, smooth to grooved, red or orange, usually many-seeded. Seeds lenticular to reniform, flattened, 2-5 mm in diameter, pale brown or yellow."


[Hybridizes naturally? Potentially] "Plants of these four cultivar-group can be crossed mutually as well as with Solanum anguivi and Solanum distichum to produce fully fertile hybrids, and therefore might be considered as a single biological species."


[Self-compatible or apomictic? Yes] "As in other Solanum species, self-pollination was dominant in S. integrifolium, although cross pollination was also not uncommon under favourable conditions."


[Self-compatible or apomictic? Yes] "Table 1. Taxonomic distribution of compatibility systems in Solanum" [S. integrifolium: SC = self-compatible]


[Reproduction by vegetative fragmentation? No] "Propagation and planting. Seeds should be taken from fully ripe fruits, washed, and then dried on cloth or paper." [No evidence of spread by vegetative means]


[Minimum generative time (years)? 1] "Shrub to perennial or annual herb, up to 200 cm tall...New leaves rapidly increase in size and flowering starts (40-)70-100 days after sowing." [Annual with potential to reach maturity in one year]


[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Fruit a globose to depressed globose, ellipsoid, ovoid or fusiform berry 1–6 cm long, smooth to grooved, red or orange, usually many-seeded. Seeds lenticular to reniform, flattened, 2–5 mm in diameter, pale brown or yellow." [No evidence, and no means of external attachment]


[Propagules dispersed intentionally by people? Yes] "Solanum aethiopicum is sometimes cultivated as an ornamental...one of the most commonly consumed fruit vegetables in tropical Africa, in quantity and value probably the third after tomato and onion, and before okra..."


[Propagules likely to disperse as a produce contaminant? No evidence]


[Propagules adapted to wind dispersal? No] "Fruit a globose to depressed globose, ellipsoid, ovoid or fusiform berry 1-6 cm long, smooth to grooved, red or orange, usually many-seeded. Seeds lenticular to reniform, flattened, 2-5 mm in diameter, pale brown or yellow."


[Propagules water dispersed? No] "Fruits of Solanum aethiopicum will float in sea water (not in fresh water),..."
<table>
<thead>
<tr>
<th>Page</th>
<th>Author and Year</th>
<th>Reference</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>708</td>
<td>Grubben, G.J.H.</td>
<td>Vegetables Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>Propagules survive passage through the gut? Yes</td>
</tr>
<tr>
<td>801</td>
<td>Grubben, G.J.H.</td>
<td>Vegetables Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>Prolific seed production (&gt;1000/m2)? Unlikely</td>
</tr>
<tr>
<td>802</td>
<td>Grubben, G.J.H.</td>
<td>Vegetables Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>Evidence that a persistent propagule bank is formed (&gt;1 yr)? Potentially</td>
</tr>
<tr>
<td>803</td>
<td>WRA Specialist</td>
<td>Personal Communication</td>
<td>Well controlled by herbicides? Unknown</td>
</tr>
<tr>
<td>804</td>
<td>WRA Specialist</td>
<td>Personal Communication</td>
<td>Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown</td>
</tr>
<tr>
<td>805</td>
<td>Grubben, G.J.H.</td>
<td>Vegetables Volume 2 of Plant resources of tropical Africa. PROTA, Wageningen, Netherlands</td>
<td>Effective natural enemies present locally? Yes</td>
</tr>
</tbody>
</table>

**Solanum aethiopicum (Solanaceae)**

**Designation** = Low Risk

**WRA Score** = 4