Rate Application

Product Name	Broadcast	Spot Spray
Milestone™	5 - 7 fl oz/A	10 ml per 2.5 gal
Forefront™	2 - 2.6 pts/A	50 ml per 2.5 gal
Remedy™	2 pts/A	50 ml per 2.5 gal

Do not exceed a total of 7 fl oz/per acre/per year of Milestone™, or 42 fl oz/per acre/per year of Forefront™

For More Information ...

Florida Department
of Agriculture &
Consumer Services
Division of Plant Industry

Helpline: 888-397-1517
www.doacs.state.fl.us/pi

University of Florida/Institute
of Food & Agriculture Sciences
http://solutionsforyourlife.ufl.edu

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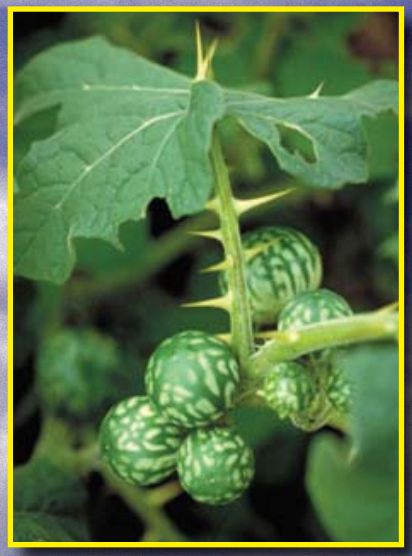
The Tropical Soda Task Force -
a partnership of agribusiness,
researchers and regulators
seeking ways to control tropical
soda apple in Florida.

Special thanks to UF/IFAS
for providing BMP guidelines,
and to the FDACS/Division of
Agricultural Environmental Services
for printing this brochure.

DACS - P - 01509

Keep *Tropical Soda Apple* Out ...



of Grass Seed Production Fields

Fresh from Florida
Division of
PLANT INDUSTRY
Protection through Detection
Florida Department of Agriculture & Consumer Services
Charles H. Bronson, Commissioner

Producing TSA-Free Grass Seed

A How-To Guide

Producing high quality grass seed requires planning, and extensive cultural and mechanical inputs. Although these time-proven practices will provide high yields and good quality seed, they might not ensure marketable seed.

In 2006, over 216,000 pounds of grass seed was rejected for sale by the Florida Department of Agriculture & Consumer Services because it was contaminated with tropical soda apple (TSA) seed. Because TSA is listed as a Florida and Federal noxious weed, it is illegal for TSA seed to cross state or county lines. Therefore, if a single TSA seed is detected in a grass seed lot, the entire load (by law) cannot be sold and may have to be destroyed.

Examining grass seed for TSA

In grass seed certification, there is a zero tolerance for TSA, and even one seed is too many.

While TSA management strategies have been effective, they do not account for TSA seed already in the soil, and for reinfestation from the soil seed bank that occurs almost immediately after herbicide application. But recently, new herbicides, Milestone™ and Forefront™, have been developed to fill this gap. These herbicides are extremely effective on existing TSA plants, but will also control germinating seedlings for over six months after application. With these new products at our disposal, new guidelines for TSA control in grass seed fields have been developed. If these guidelines are followed, the likelihood of TSA-contaminated seed lots can be virtually eliminated.

Tropical soda apple, Solanum viarum Dunal (Solanaceae), a perennial prickly weed native to South America has been spreading rapidly in the US since it was discovered in Florida in 1988. Now, over one million acres of land in Florida is infested. A single TSA plant produces about 150 fruits, and each mature fruit contains about 400 seeds – up to 60,000 seeds are produced per plant with a germination rate of at least 75%. Cattle and wildlife are the primary means of distribution. The undigested seeds are spread by passage through the animals' digestive tracts. TSA also propagate vegetatively from root buds that regenerate new shoots.

TSA plants can grow to six feet high and are as broad as they are tall. Stems are sturdy with prickles. Leaves are covered with fine hairs that give them a velvety sheen. White flowers are hidden under the leaves. Immature fruits are pale green with dark green stripes and resemble tiny watermelons. Mature fruits are dull yellow, and about 1 – 1.5 inches wide.

Best Management Practices

Dense stands

- Apply Milestone™ (5 to 7 fl oz/acre) or Forefront™ (2 to 2.6 pt/acre) in the late spring or early summer after TSA plants have emerged from winter dormancy and before fruit development.
- If fruit are present at time of herbicide application, mowing area may be necessary prior to seed harvest to ensure that no TSA seed are gathered in harvest.
- Monitor treated area for escaped plants. Spot-spray as needed with Milestone™ (10 ml per 2.5 gal), Forefront™ (50 ml per 2.5 gal), or Remedy™ (50 ml per 2.5 gal), plus surfactant and color marker.
- Continue to monitor for one year. Determine if periodic spot-spraying has been sufficient to stop TSA, or if the entire area should receive another broadcast application.
- For broadcast applications, spray Milestone™ or Forefront™ at least 60 days prior to harvest to allow adequate time for plants to die.

Sparse stands

- Spot spray in spring with Milestone™ (10 ml per 2.5 gal), Forefront™ (50 ml per 2.5 gal) or Remedy™ (50 ml per 2.5 gal), plus surfactant and color marker.
- Monitor every 45-60 days to determine if additional spot-spraying is necessary.
- If TSA is observed in part of field, avoid harvesting this area. It is better to sacrifice a portion of the field than have the entire seed lot rejected due to TSA contamination.