

News from the Watershed

Help is on the way for the control of tropical soda apple in Florida.

Recently, Jennifer Abbey and I attended Pasture Weed Day in Ona, Florida. While there, we learned about some new, cutting edge experimentation that is being done on tropical soda apple (TSA). The discovery has been made that a naturally occurring plant virus called *tobacco mild green mosaic tobamovirus* (TMGMV) is being used to infect and kill tropical soda apple. The testing has proven that the virus can be used safely and effectively to kill this problematic weed.

Florida land owners have experienced their share of challenges with tropical soda apple (*Solanum viarum* Dunal), an exotic weed that originates from Paraguay, northern Argentina, Uruguay, and southern Brazil. It is a serious weed problem in many perennial grass pastures, ditch banks, citrus groves, sugarcane fields, rangelands and native areas of Florida. The plant foliage is not utilized or consumed by livestock and the invasive weed can infest a pasture or rangeland in 1-2 years, resulting in lower stocking rates. In natural areas, it is problematic because it displaces native vegetation. An estimated 1 million acres of Florida is infested with this problematic species.

One of the main challenges in controlling this weed is the fruit it produces. Each 1-1 ½ inch yellow fruit contains about 200-400 seeds with a germination rate of approximately 75% or more. To add to the problem, the fruit is produced throughout the year, but mostly from September through May. Wildlife such as feral hogs, deer and raccoons feed on the fruit and through their feces, spread about 40,000-50,000 seeds per year. Beef cattle will also eat the fruit and spread the seed in a similar manner.

Apparently the drought conditions that Florida has been experiencing for the past couple of years has added to the problem. TSA was first discovered in South Florida in 1987. However, studies show that following an extended period of drought from 1987-1989, the plant literally exploded in populations. Therefore, we are experiencing increases of the pesky plant once again. TSA is on the invasive species lists of both the state and federal governments.

Historically, TSA has been controlled by physical removal (hand pulling or digging out with a shovel) or chemical treatments. These methods can be both time consuming and costly. Researchers from the University of Florida are experimenting with new techniques in controlling TSA. As mentioned above, a plant virus that is found in tobacco is now being used to treat these invasive exotics. Tobacco mild green mosaic tobamovirus is a plant virus that naturally occurs in Florida. It will infect and kill TSA. The solution made from this virus is named SolviNix and is defined as “a Natural Biological Herbicide to Control Tropical Soda Apple.”

SolviNix is a plant pathogen and does not pose threats to other plants, animals or humans. To be effective, the TSA must be wounded first and then the solution applied will infect the plant with the virus and kill it. The virus has been successfully field-tested in small-scale trials at several locations in Florida. According to the researchers, 80-100% of the TSA plants die within 3 – 4 weeks of application.

Work has been done to develop the virus in two forms: a liquid concentrate and a wettable powder. Both formulas have been approved for experimental testing in Florida under an Experimental Use

Permit. In 2008, experiments and testing will take place over 5,000 acres in Florida which “is intended to generate efficacy, application and shelf-life standards for full registration of SolviNix.”

Hopefully this new biological herbicide will be on the market in the near future and will be the solution to this overwhelming problem for Florida landowners and land managers.

In the meantime, landowners can be proactive in the control of TSA in many ways. The University of Florida Institute of Food and Agricultural Sciences (IFAS) recommend the following:

- When shipping cattle, ship cattle from an area that does not have TSA or is TSA fruit free.
- Mowing a TSA infested pasture prior to shipping will eliminate the fruit and the consumption of TSA seed by the cattle.
- When you receive a group of calves or cows on your ranch, hold them in one area for up to six days to avoid the spread of TSA to other areas on your ranch.
- If you buy TSA-infested hay or grass seed, contact the seller and ask them to stop selling these products and to control the weed on their property.
- Mowing every 60 days will prevent fruit production and result in some (10-30% for each mowing) plant mortality.

According to the University of Florida, “cattle producers have been proactive when it comes to controlling TSA and reducing the spread of this weed within Florida and into other states. In fact, other states have implemented many of Florida's BMPs (best management practices) for controlling TSA. All Florida cattle producers need to continue their efforts at controlling TSA and thus stop the spread of TSA within our state and throughout the southeastern United States.”

The United States Department of Agriculture through the Natural Resource Conservation Service offers cost share incentives to landowners for the control of TSA and other exotics. For more information on these programs or other agriculture and environmental issues, please visit our website at <http://www.highlandsswcd.org/> or give us a call at (863) 402-6545.

