



Silverleaf nightshade (Solanum elaeagnifolium Cav.) is a native perennial plant that is often considered a noxious weed to most landowners, due to its toxicity to livestock and ability to reduce forage yields. Silverleaf nightshade has been difficult to control due to its intricate root system and high tolerance to many herbicides. We selected three herbicides for use based on the fact that they are labeled for suppression of Silverleaf nightshade, and are common use herbicides in farming or ranching. Our three chemicals are Banvel<sup>®</sup> (dicamba 48.2%) sprayed at 1.5 pt/ac, Pasturegard HL (Triclopyr 15.56%) sprayed at 1.5 pt/ac, and 2-4D (Dimethylamine 47.3%) sprayed at 4 pt/ac. All herbicides were sprayed at the recommended label rate for fallow land. Our study was set up in a completely randomized design with 3 replications of the 3 herbicide treatments plus a control for a total of 12 plots. . Data will be collected 21, 42, and 63 days after spray treatment to determine the efficacy of each product. Our first applied on July 3<sup>rd</sup>, 2018 and since then we have seen a consistent loss of blooms and chlorosis of the leaves throughout all three of the chemicals applied. The Pasturegard HL has more visual leaf growth damage than the other two herbicides applied. With more time we will have a better understanding and knowledge of how the silverleaf nightshade will be affected by herbicides.

# Introduction

Silverleaf nightshade (Solanum elaeagnifolium) is a perennial flowering species native to the United States. They commonly grow as a weed in field crops and over grazed pastures. They thrive in most soil types and weather conditions. Silverleaf nightshade is toxic to livestock and has been known to become so abundant in farming practices that they can lower yields. Their deep tap root and ability to grow from existing plant material, has made the practice of mechanically removing them challenging and not cost efficient. ("Plants Profile for Solanum elaeagnifolium (silverleaf nightshade)") The purpose of our study is to evaluate herbicide efficacy on the control of Silverleaf nightshade.



### Results

In all herbicide treatments the number of living Silverleaf nightshade plants was reduced. Our data categories consisted of dead or living plants. Plants that were visibly ill with chlorosis of the leaves and sheading of fruit were marked living until found to be totally dead. Our data proves that over time the number of living Silverleaf nightshade was reduced. The overall results showed Pasturegard HL had the highest reduction in living Silverleaf nightshade plants 84.30%, 2-4D was second 66.91%, and Banvel the lowest 39.3%. All three treatments significantly reduced the number of living plants. Figure 1 is the reduction of Silverleaf throughout every evaluation and figure 2 is our overall mortality rate.



# Herbicide Efficacy on the Control of Silverleaf Nightshade

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# ABSTRACT

# Methods

We evaluated three different herbicides on the control of Silverleaf nightshade in a wintergrass production system. This experiment site was located in Kingsville, Texas at the *South Texas Natives* production facility (27.531616 -97.887377) having the soil type Clareville clay loam (CkA), with a 0 to 1 percent slope. The area is currently being used to grow Texas wintergrass a native cool season perennial grass, however an abundance of Silverleaf nightshade has spread profusely in the area. Treatments applied were:

- Pasturegard HL (Triclopyr 15.56%) sprayed at 1.5 pt/ac
- Banvel<sup>®</sup> (dicamba 48.2%) sprayed at 1.5 pt/ac
- 2-4D (Dimethylamine 47.3%) sprayed at 4 pt/ac
- Control

All herbicide treatments were applied at 48.4 liters/acre at 2.5mph with 30psi, in a randomized complete block design with 3 replications and a backpack CO2 applicator. Data on Mortality (plant death) was collected on the day of treatment, 21 and 42 days after treatment. In order to acquire are average population of Silverleaf nightshade a quarter meter square was randomly thrown in to each replication 5 times; and the number of living Silverleaf nightshade was recorded.





Our data showed that all three of the chemicals applied provided control of Silverleaf nightshade with Pasturegard HL showing to be the most affective chemical applied. None of the chemicals had a 100% mortality rate, although all plants sprayed showed illness. Many nightshade recovered and began to sprout new shoots over time. Their ability to rejuvenate after our herbicide application was superior. If several applications were administered possibly with a higher volume of water with our herbicide the ability to control Silverleaf nightshade would most likely increase tremendously. Each of the chemicals used has a number of pros and cons that need to be considered along with its effectiveness. For example, even though we received the best results from Pasturegard HL it can only be applied to well established grasses and has a 3 month plant back restriction. Conversely, 2-4D which had minimal control has no plant back restrictions.

All three herbicides tested reduced the number of living Silverleaf nightshade plants, with Pasturegard HL being the most effective. We observed Silverleaf Nightshade has the ability to overcome illness caused by herbicide application. Further research is needed to determine if several herbicide applications will affect the control of Silverleaf nightshade over an extended period of time.

Base. "Silverleaf Nightshade (Solanum Elaeagnifolium)." Agriculture Technology | Precision Agriculture | Farms.com, www.farms.com/fieldguide/weed-management/silverleaf-nightshade.aspx. "Plants Profile for Solanum Elaeagnifolium (Silverleaf Nightshade)." Plants Profile for Ledum Groenlandicum (Bog Labrador Tea), plants.usda.gov/core/profile?symbol=SOEL.

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### Discussion

## Conclusion

### Works Cited