



Research Report: Low input weed management of wild blueberries 2014-16

By Olivia Saunders, UNH Extension Field Specialist. *Written March 2017.*

Purpose

To evaluate a method of organic weed management in wild, lowbush blueberries.

Introduction

Effective weed management of wild blueberries can be challenging for the organic and low-input grower. Relatively few, cost-effective options to manage certain weeds organically exist. Semi-annual burning and mowing will control woody species from shading out the crop, but will not control grasses such as little bluestem, bunchberry, bracken fern, and a number of other blueberry production weeds.

We explored the use of sulfur as a weed control method, where soil pH is lowered to an extreme level, creating an advantage for the blueberry over little bluestem. Little bluestem is a bunching type grass found throughout the northeast, especially in areas of sandy, low fertility soil, where wild blueberries also thrive. Little bluestem has become the primary weed of concern in many blueberry fields, especially those managed organically. Little bluestem is commonly used in seeding mixes for conservation or bankside stabilization efforts, has a wide distribution, and can easily be spread field to field by seed. Those managing their fields organically should keep a keen eye out for this grass, as once it has established it is difficult to eradicate without the use of herbicides.

Trialing a new method

Sulfur application is one option organic growers have to both lower soil pH and manage weeds. The theory with pH management as a weed control method is that you are providing the acid-thriving blueberry with an advantage over the grasses, which prefer a neutral pH. We tested this method on two sites with little bluestem present, both of which are managed either organically or as “low input”.

Methods

In the spring of 2014, we added 90% elemental sulfur to randomized plots, measuring 10 by 100 feet each, replicated four times, with a drop spreader. We did this at two sites, in northeastern NH, both with little bluestem present. Our treatments were pH of 4.0 (one time application of 1,000lbs S/acre), pH of 4.5 (one time application of 500lbs S/acre) and pH of 4.0 with 5-4-3 organic fertilizer (one time application of 1,000lbs S, 30lbs N/acre). We calculated this rate based on an existing soil pH of 5.0. We monitored changes by comparing to control (untreated) plots, which received no sulfur or fertilizer. We monitored the abundance of little bluestem for three seasons, each spring and fall, pulled soil samples from each plot and



Nice, even distribution of sulfur to the soil using the drop spreader

analyzed leaf tissue during harvest to detect any nutrient deficiencies as a result of the acidic soil.

Results

Overall, untreated plots had more little bluestem after three years than treated plots, indicating the sulfur did have an effect. However, the sulfur alone did not provide enough control to identify it as an effective management tool to maintain commercial production.

We were not able to reach the target pH of 4.0 at either study site (4.4 and 4.5 were the lowest achieved at either site, and not in all plots), likely because of the high buffering capacity & high organic matter present at both sites. If we had reached our target pH of 4.0 we might have seen better control. Additionally, in plots that

received nitrogen fertilizer with sulfur, we noticed healthier little bluestem plants. The grass responded positively to the fertilizer, even with the addition of sulfur. We conclude that since little bluestem was fairly well established in both of these fields, organic management may no longer be an option. Use of sulfur as an organic control, may only be feasible in areas with a small population of the grass, as an early control method.



Wild blueberries in late July, with little bluestem distributed throughout the field

Recommendations

- Every effort should be taken to control little bluestem before it has fully colonized a wild blueberry field. This requires regular scouting of fields.
- If little bluestem is present, you should avoid applying nitrogen fertilizer as it will benefit the weedy species over the blueberry. For the organic producer, it is more important to control the weed first before fertilizing the crop.



- Burning and mowing alone will not control little bluestem.
- If only a few individual plants are present, applying sulfur, using the “dollop” method directly onto the plant may provide more effective control. The dollop method is not realistic once a field has been fully colonized by the grass.
- Sulfur should not be considered as the single control method but should be done in conjunction with burning & mowing, hand pulling, and herbicide treatment if the weed is well established.
- If using sulfur as a treatment option, soil pH tests should be taken 1-2 months after application to see if the target pH was achieved.

A control plot on left, where little bluestem has outcompeted the blueberry. The right side of the photo is one of the low-pH plots, where sulfur was applied.

Acknowledgements

Thank you to our grower-collaborators, Ryan Bushnell, Corey Eastman, Steve Panish and the Eaton Conservation Commission. We would like to acknowledge Northeast SARE for providing funds to conduct this research, and the landowners for providing us with space to trial this method. We would also like to thank the many volunteers with the Eaton Conservation Commission who helped apply sulfur and monitor results.

Funding for this research project was made possible by the Northeast SARE Partnership Grant, ONE14-222. For the full report visit the SARE Website <http://www.sare.org>.

For additional information, please contact Olivia Saunders (Olivia.Saunders@unh.edu, 603-447-3834).