



Converting pastures to native warm season grasses: Summer forage and wildlife habitat in Caroline County

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Introduction

While warm season annual grasses can produce large amounts of high-quality forage in the summertime, this forage often comes at significant financial cost. In addition to the yearly costs of seed, fertilizer, equipment, and labor, establishing annuals can be a risky endeavor with the possibility of summer droughts.

Native warm season grasses (NWSG) also may be utilized to produce large amounts of high-quality forage in the summertime, but perennial species don't require annual establishment costs or risks. These species are well adapted to Virginia, and don't require as much inputs as intensively managed annual species that have been cultivated and introduced from other areas of the world.

Other advantages of NWSG species include providing habitat for wildlife and diversity in the forage base.

Unfortunately, historic challenges with establishment and misperceptions surrounding nutritional quality and stand management largely account for farmer reluctance to convert tall fescue (*Schedonorus arundinaceus*) pastures to NWSG in Virginia. We intend to address these issues through demonstrations: this fact sheet will provide documentation of a producer's real-world conversion experience.

Swallow Hill Farm, Woodford, VA

Tim and Sue Tobin raise forage fed and finished beef for their community, along with a number of

other farm-raised products such as eggs, pork, lamb, and honey. The farm is strategically located between large population centers in Richmond and Northern Virginia.



Figure 1. One of the greatest challenges for Swallow Hill Farm has been producing enough grass-finished beef to keep up with the demand. (Photo: Tim Tobin)

A priority for the Tobins has been to improve the quality of their land and farm resources, which in turn improves conditions for the entire ecosystem around them and downstream from them. In particular, with family living on the Chesapeake Bay, the Tobins understand the importance of management intensive grazing and keeping livestock out of surface waters. Tim Tobin was named the 2021 Forage Producer of the Year by the Virginia Forage and Grassland Council in recognition of his achievements and contributions to his community.

Swallow Hill Farm beef is highly sought after, and Tim credits the quality of their product to intensive

forage production. Tim utilizes annual forages in both the summer and winter for finishing animals, and he has converted existing tall fescue pastures to novel endophyte tall fescue while also interseeding diverse legumes into other fields that have not yet been renovated.

Tim recognizes that a key to their farm’s profitability lies in extending the grazing season. However, establishing forages on an annual basis requires significant inputs. For this reason, Tim decided to integrate NWSG into his pasture system.

Tim selected the 8-acre conversion site for two reasons. First, he had already slated these fields for renovation due to a need to eradicate nimblewill (*Muhlenbergia schreberi*). Second, he wanted to provide wildlife habitat in these perimeter fields as a sort of wildlife corridor to neighboring woodlands.

Tim summed up his reason for converting to NWSG: “If all goes well with this planting, we will be able to support native wildlife while producing high quality forage for our livestock.”

Conversion Process

The process that Tim utilized to renovate a tall fescue pasture with a nimblewill infestation to Eastern gamagrass (*Tripsacum dactyloides* cv. Pete) involved four rotations of annual forages over two years to ensure that the weeds were sufficiently controlled.



Figure 2. Cattle graze winter annual forages at Swallow Hill Farm. (Photo: Tim Tobin)

Table 1: Timeline for converting pastures to NWSG, according to Tim Tobin. (Roundup PowerMAX® or generic glyphosate at 1.5 qt./ac. was used as herbicide.)

Category	Task	Date
Seed bed preparation	Spray cool season grasses	May 12, 2017
Seed bed preparation	Establish smother crop	May 15, 2017
Seed bed preparation	Harvest smother crop	July-August, 2017
Seed bed preparation	Spray smother crop	September 6, 2017
Seed bed preparation	Establish smother crop	September 11, 2017
Seed bed preparation	Harvest smother crop	April-May, 2018
Seed bed preparation	Spray smother crop	May 27, 2018
Seed bed preparation	Establish smother crop	May 30, 2018
Seed bed preparation	Spray smother crop	September 18, 2018
Seed bed preparation	Establish smother crop	September 20, 2018
Establishment	Plant NWSG (10 lb. of Pure Live Seed/ac)	December 18, 2018
Establishment	Graze smother crop	March, 2019
Establishment	Spray smother crop	March 19, 2019
Establishment	Evaluate stand	Summer, 2019
Establishment	Clip field	August 4, 2019

Establishment	Burn stand	April 4, 2020
Utilization: Year 1	Rest field	2019 until early June, 2020
Utilization: Year 1	Rotationally stocked lightly with cattle	June 10-18 July 26-31 Sept 27-Oct 3

Tim’s choice of annual forages included German millet (*Setaria italica*) and cow peas (*Vigna unguiculata*) in the first summer and diverse mixtures of seasonally appropriate annual forages in the first winter and second summer.

Tim also established the gamagrass in December to induce germination through the natural cold stratification process. Tim drilled the seed directly into a fall-planted stand of spring oats (*Avena sativa*), along with 100 lb/acre of pelletized lime as a carrier. The soil test recommended no additional fertilizer for the establishment of the gamagrass.

Cattle grazed the oat forage once in February to remove some of the residual biomass. Tim then sprayed the oats prior to any germination of the NWSG. This spray took place in March, but Tim believes it was slightly early as it was still cool. Warmer temperatures likely would have resulted in a better kill of the weeds.

Germination and weeds

The planting was evaluated in the summer of 2019, and unfortunately, a tremendous amount of crabgrass (*Digitaria spp.*) and foxtail (*Setaria spp.*) had germinated in the field.

It was difficult to identify the gamagrass seedlings due to the heavy competition from crabgrass and foxtail. He was initially very concerned that the weed load would cause a stand failure, but he later found much of the gamagrass had germinated.

Tim decided to clip the pasture at a 12” height to set back the crabgrass & foxtail and to open the canopy for the young gamagrass seedlings.

The following spring, Tim burned the stand to reduce weed competition and surface residue and to release nutrients for the developing gamagrass.

Before long, the gamagrass started emerging through the ash.



Figure 3, Burning the gamagrass stand (top) and green-up post- burn (bottom). (Photos: Tim Tobin)

Utilization

The gamagrass regrew very fast in the second growing season, enabling three light grazings.



Figure 4. Cows and calves grazing a one-year-old stand of Eastern gamagrass. (Photo: Tim Tobin)

Tim strip-grazed the pasture three times that summer with the breeding herd (21 cows, 20 spring calves, and a bull), with fresh forage allocated daily.



Figure 5. Tim strip-grazed the NWSG field in late July (top) prior to clipping the pasture in August (bottom) to stimulate growth and reduce weed seed production. (Photos: Tim Tobin)

Once the first frost sent the gamagrass into dormancy, Tim turned in a flock of 20 sheep to graze the residue and clover.

Maybe it's a coincidence, but quail have already been heard in this gamagrass pasture, and Tim has video proof to show it.

Next steps

On June 24, 2020, Tim also planted a pasture with a mixture of big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and indiagrass (*Sorghastrum nutans*).



Figure 6. A three-way mixture of native grasses 75 days after seeding at Swallow Hill Farm. (Photo: Tim Tobin)

Tim is looking forward to seeing how that forage performs in the summer of 2021. He believes the addition of the NWSG will help to fill a summer niche and reduce the risks and costs of planting summer annuals.

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