

VT Goat collaborative Project at Pine Island Farm

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Addressing invasive Reed Canary Grass

This project expects to introduce an array of management of environmental conditions to control Reed Canary Grass (RCG) *Phalaris arundinacea*. The control of RCG through grazing and clipping can both, encourage emergence of other species to compete with RCG and produce benefits from its nutritional value.

The combination of grazing goats and precision¹ haying of Reed Canary Grass *Phalaris arundinacea*, (Fig. 1) could create conditions to encourage new species and control RCG. This grass is an invasive specie that tolerates well, flooded areas and it is extremely difficult to eliminate due to its reproductive system (via stolons and seeds), however it doesn't have a prominent root system which fails to contain erosion in stream banks.

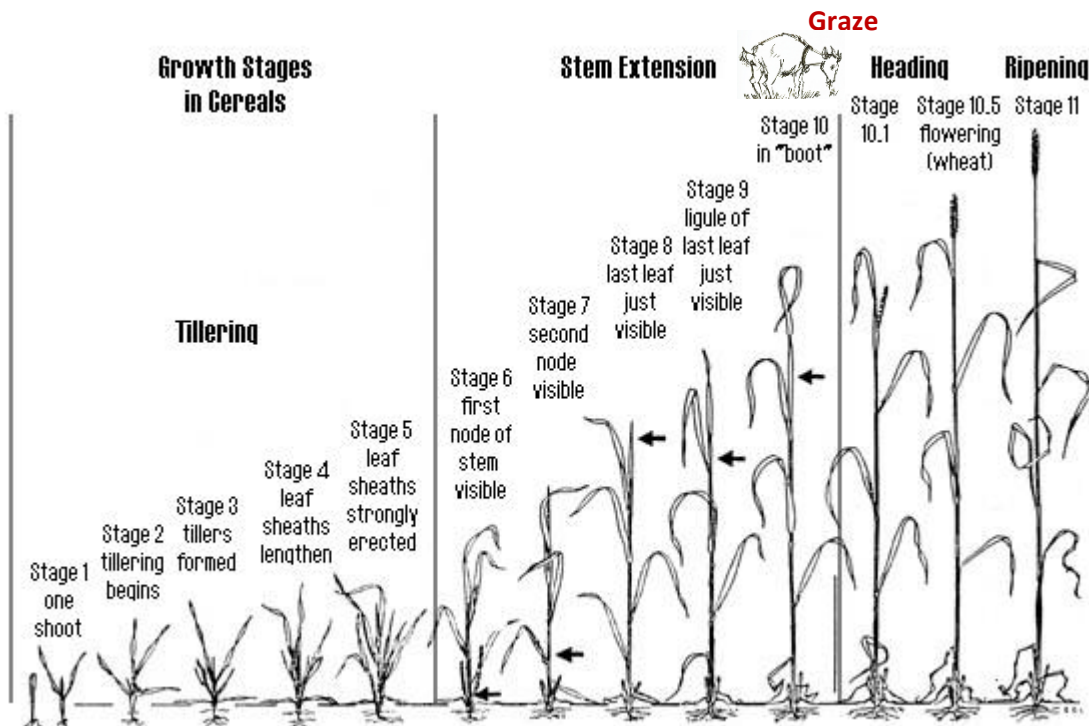


Fig. 1. Grass growth stage. Indication of when to precision graze to reduce control RCG and future re-seeding.

¹ By precision grazing, we mean clipping or grazing 'against' RCG physiology, acting between boot stage and floration, when plant energy reserves drop. This strategy will reduce natural reseedling.

RCG grows rapidly and it has an adequate nutritional value for animals however, it outcompetes other species. The use of herbicide is not contemplated in this study because the idea is to encourage as many species as possible

Goats will be intensively managed to graze an area of approximately 164 x 82 sq feet (0.31 acres) in the bands in-between strips.

Birdsfoot Trefoil (Lotus corniculatus) strip assessments

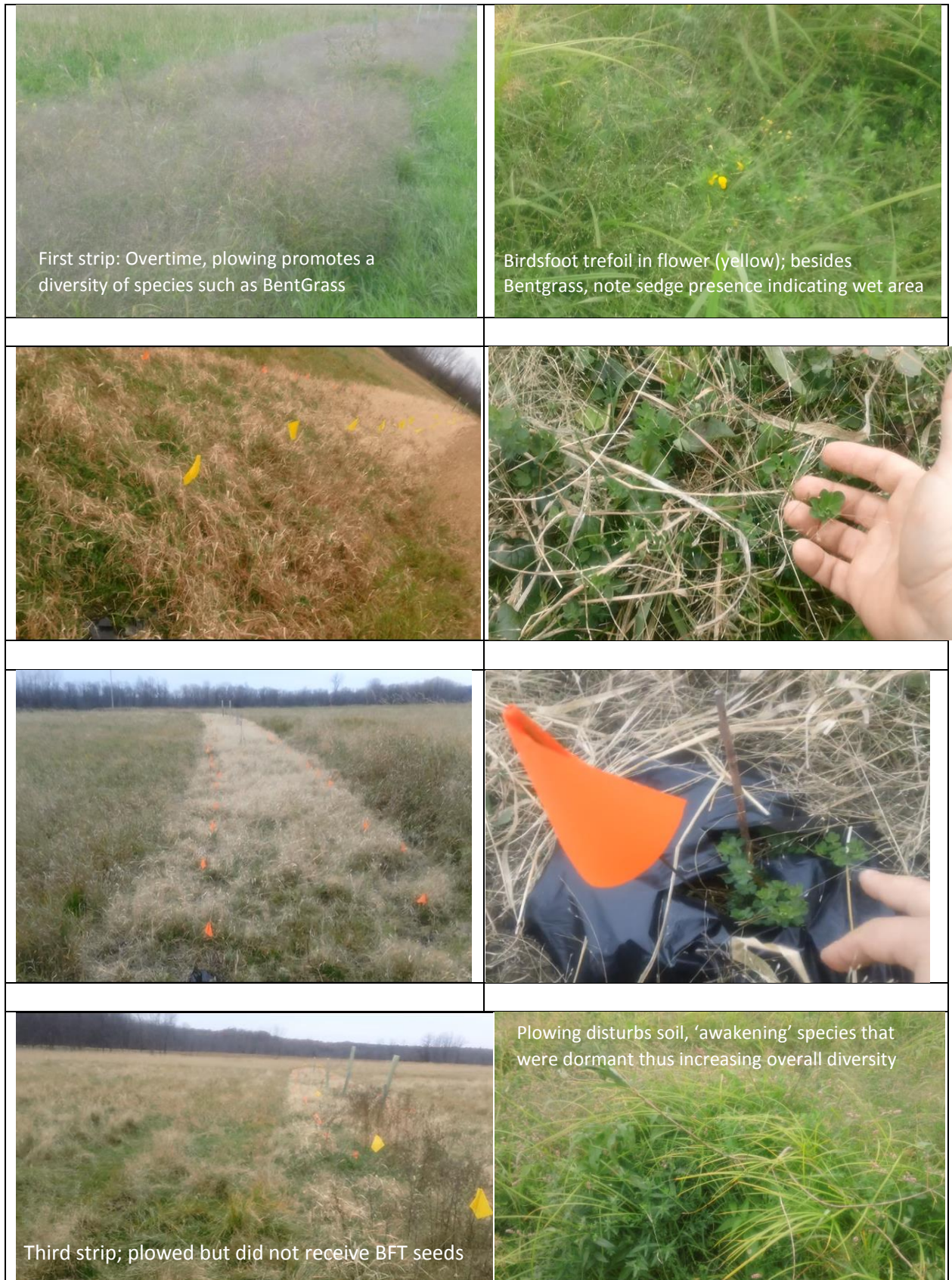
Three, double plow-width regeneration strips were tilled in Spring 2014 to establish birdsfoot trefoil (*Lotus corniculatus*). The practice of plowing creates conditions for other seeds species to have a chance to 'awake', providing a more diverse forage resource for goats, wildlife and pollinators. Willows were established in high density, on either side of each strip. One or two Silver Maple trees were also established interspersed in the strips. The main goal of these strips is to multiply birdsfoot trefoil, spreading seeds into the RCG grazing bands. Goats will be able to browse on willows.

Birdsfoot trefoil is a deep-rooted legume suitable for pasture or hay in areas with drainage problems or low soil pH. While not perennial, birdsfoot trefoil can last up to 10 years. It is moderately winter-hardy and tolerant of dry summer conditions if soil depth provides available moisture. It can also be irrigated in shallow soils, or drier areas. One of the advantage of this legume is that it is a non- bloating legume quite suitable for sheep or cattle but not typically used for horse pasture, because of the presence of tannins. Bloat is caused by rapid production of carbon dioxide gas (among others), due to fermentation of green fresh forage in livestock rumen.

Birdsfoot

It is not tolerant of early spring grazing or continuous grazing and establishes slowly and with some difficulty, but is vigorous once established. Lotus species each require unique Rhizobium for nodulation. It tolerates only short periods of flooding.

As with any legume, birdsfoot trefoil excels at nitrogen fixing plant, increasing yield and protein content in grasses. It also provides great amounts of calcium and fair quantities of phosphorus, vitamins A and D, important in the maintenance of fertility.



Figs. 2. Evolution of BFT strips (Aug-Nov. 2014). Last two photos show third strip, plowed but not seeded BFT.