

Freymoyer Farm

Rotational Grazing as a Management Tool for Christmas Tree Farmers

Introduction

The Freymoyer Farm-Farmer Grant proposed to evaluate the use of sheep as a tool for Christmas tree producers, utilizing the sheep as a substitute for mowing. The sheep were rotated in three blocks of trees from late May through early September. Additionally, a field day, sponsored by grant advisor, Dan Ludwig, and the SE Pennsylvania Chapter of Project Grass, was held on the Freymoyer Farm for small ruminant and Christmas tree producers. Mike Hartman, collaborator and owner of the sheep, cared for the sheep on a daily basis. Dan Ludwig, grant advisor, assisted in marketing and organizing the project field day.

Project Description and Methodology

With electric fence and a solar charger, we created three pastures of approximately 1 acre each, enclosing three blocks of mature (0-2 years to sale) Christmas trees. We chose mature trees because any damage to the trees from browse would be limited to the lower reaches of the tree rather than the leader. Initially, we further divided the pasture into three sections of approximately one-third of an acre. Yearling sheep were introduced May 22 into the first section. A control block of Christmas trees of similar size was maintained and labor costs for the section were recorded. Soil samples were taken before and after the sheep were pastured.

Because of some unexpected delays in securing materials, the sheep were introduced later than proposed and grass had reached full maturity, approximately three feet in height. We had proposed to use lambs, however, at this time they had not been trained to the electric fence and instead used yearlings.

The six yearlings were rotated through the first two sections successfully. In addition to the browse, the sheep matted the grass to a level similar to mowing. No mowing was needed in any of the three pastures.

Project Results

Over the course of a long weekend (mid June) when grantee and collaborator were out of town, the sheep heavily browsed trees in the third section of the pasture and escaped through the fence to the previous two sections in search of feed. Browse ranged from isolated (one branch) to

heavy (entire tree) and was most significant on the scattered small trees (three to five feet) where leaders were damaged. The damage to the Christmas trees while significant occurred early enough to allow for regrowth. It is estimated that forty trees were browsed with 30-50% of those trees unmarketable this year.

Additionally, damage occurred on the lower areas of the trees which the yearlings picked as "shade and fly" trees with the larger yearlings causing more breakage. The lower limbs of these trees need to be removed as they generally browned and died. The cost of the damage from browse and limb breakage is estimated to be approximately \$600-\$800 and negated any cost savings from not having to manage grassy competition to the trees by mowing.

We view the major browse episode as human error and not reflective of the project. The lower limb damage while significant could be alleviated by allowing access to a well shaded area in each pasture. For our purpose this was not possible.

After the browse event, we replaced the six yearlings with eight ram lambs intended for fall sale and allowed the lambs access to the full acre of the three pastures without smaller paddocks. A small amount of browse occurred when there was sufficient forage but was isolated to three to five small trees. Damage to the trees from the lambs in search of shade was much less compared to the yearlings.

The eight lambs were removed September 8th. Soil samples were taken the following week and showed an increase in P and K. This is believed to be a result of a December 2006 lime application of 1.5 ton per acre.

In the control block, which was maintained with standard practices, labor totaled 5.5 hours. For project purposes, the labor involving the management of the lambs exceeded 80 hours. While there is marginal savings on equipment and fuel, the labor expense is far greater and sheep will not replace the mower for Christmas tree management.

Project Extension

We plan to use blocks of Christmas trees as pasture for lambs again next season. The rate of weight gain and condition of the lambs were acceptable and although the trees were browsed, this was largely controllable. We view

the project as a success and will largely use the same procedure, however, with modifications.

First, we will use only lambs and include in each pasture an area that offers shade and relief from flies. In addition to the three one acre pastures, we will also fence a sacrifice area that does not have any marketable trees and offers large amounts of cover and shade. Ideally all of the blocks of trees would include only large trees, those greater than six feet. We found the ratio of eight lambs to three acres to be an appropriate ratio.

We view the acres of grass in nursery and Christmas tree production as a potential benefit to sheep producers rather than a significant management cost for Christmas tree producers. The issue is removing risk, in the form of tree damage, to the tree producer.

In our instance, the Christmas tree producer bears all of the potential downside (damaged trees) while not sharing in any of the benefit (marketable sheep, fed on free grass). This could be addressed in one of several ways: an insurance policy on the trees, sharing in the ownership of the marketable lambs or finally, ownership of the lambs and Christmas trees by one individual.

Outreach Program

We conducted a field day on July 26th at the farm to discuss the project and its results at that time as well as possible applications for other producers. The event was publicized in the Reading Eagle and Lancaster Farmer, which featured a half page article on the project in its monthly grazing insert. Additionally, the event announcement was forwarded to the PA Christmas Tree Producers Association and the PA Association for Sustainable Agriculture and was distributed on their email list servers. Finally, notice was also mailed to members of the SE PA Project Grass members.

The turnout was better than expected with approximately 25 individuals from Berks, Lehigh, Lebanon, Bucks, Delaware and Dauphin counties as well as Christmas tree and sheep and goat producers; several people traveled over one and a half hours for the program. Grant advisor Dan Ludwig of Lebanon NRCS was present as were several members of the Penn State Cooperative Berks Extension.