USDA United States Department of Agriculture

Lake County Conservation District

2016 Irrigated Pasture Legume Inter-Seeding Trial

By Kristi D'Agati and Ben Montgomery, Ronan NRCS Field Office **October 17th, 2016**

County: Lake

Number of Trial Locations: 3

Species Used: birdsfoot trefoil, sanfoin, cicer milkvetch, alsike clover, red clover, ladino white clover, alfalfa, meadow brome

Average annual Lake Co. precip: 13-16"

Dominant Soil Type: Silt Clay Loams

Planting Date: March & April, 2016

Seeding Method: Broadcast with light harrow or No-till drill

Seeding Rate: Broadcast rate and Drill rate

Land use: Irrigated Pasture (Pivot and wheel line)

Fertilizer: none

Introduction:

Research has shown that under some conditions, inter-seeding into existing pasture can be successful. Many of these studies have used expensive no-till drills and other equipment unavailable to many agricultural producers. Some research, including our preliminary research in Ronan has shown that depending on site conditions, methods and species selection, broadcasting seed can be successful. Broadcasting seed can be very inexpensive and is a widely available option for most producers. This study tested the viability of no-tilling vs. broadcast seeding of selected varieties. Multiple plots were used under different treatments. Treatments included combinations of no-till seeding, broadcast seeding, heavy animal impact (winter feeding) to disturb soil surface and high stock density grazing.

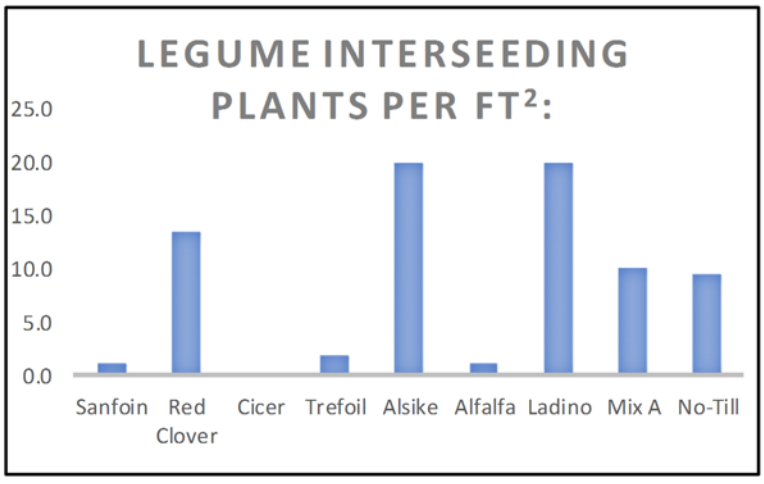
Three ranches in Lake County were chosen to participate in this study. Legumes selected for this trial **included both bloating and non-bloating varieties. All legumes were broadcast seeded in March, 2016 and no-till drilled in April, 2016. Ranches attempted to graze** or run a light harrow over the seeded areas in order to improve seed-to-soil contact and increase germination rates. For each location, individual plots were broadcast seeded with each species and a 5 acre plot was no-till drilled with a mix of all of the species.

Results:

Plots were evaluated in July 2016. Species counts were completed in each plot using a one foot square hoop. It is important to note that because some legume species are slower and more difficult to establish than others, this study will take multiple years in order to effectively gauge results.

Species	Bloating	Broadcast Rate (lbs/ac)	Drill Rate (lbs/ac)	2016 Results (plants/ft^2)
Meadow brome	No	20	10	NA
Sanfoin	No	68	34	1.1
Cicer Milkvetch	No	16	8	0
Birdsfoot trefoil	No	6	3	1.9
Alsike Clover	Yes	6	3	20.0
Red Clover	Yes	8	4	13.6
Ladino White Clover	Yes	8	4	20
Alfalfa	Yes	10	5	1.2
Mix (all species)		84		10.1
No-till Drill Mix			42	9.5

Table 1: Species planted, seeding rates and 2016 results



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Results Continued:

In 2016, red clover, alsike clover and ladino clover had the highest germination rates. Plant counts will be completed each year for the next five years. Initial results found in 2016 may not accurately predict long-term findings.

Summary and Discussion:

Initial findings indicate that interseeding legumes into existing pastures can be an effective method of increasing diversity of pasture forage species. Both no-till drilling and broadcasting were effective. In general, during the first year clovers (red, ladino tall white and alsike) all very effectively established. Sanfoin, birdsfoot trefoil and cicer milkvetch had varying levels of success, but generally were poor to establish in the first year. It is likely that these species will establish more slowly and monitoring will continue for five years. Of note, in the previous interseeding study that was conducted in 2015, cicer milkvetch showed up well in the second year.

In order to improve establishment it is highly recommended that the following guidance be used:

- Disturbance of existing pasture to 'set back' existing plant community is important to aid in initial establishment of legumes. Pasture should be grazed heavily during the prior fall, winter, and early spring. Harrowing can also be beneficial at the time of seeding.
- Maintain adequate moisture during the year of establishment. Many seedlings germinate but fail to survive during dry conditions. Frequent, light irrigations are recommended.
- Fall dormant planting may be beneficial instead of spring seeding. Again, disturbance is important.

Site 1: No-till drill

Site 2: No-till drill

Site 1: Broadcast

Site 2: Broadcast

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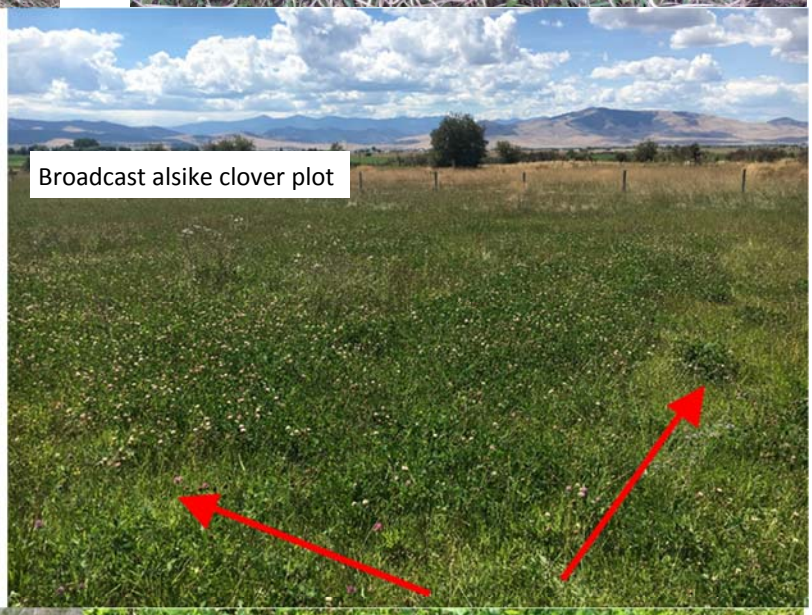

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Broadcast red clover plot


Broadcast mixed species plot


Broadcast red clover plot


Boundary of broadcast mix species plot