

1986, 1987 and 1988 ALFALFA INTERSEEDING TECHNIQUES TRIAL

This trial was designed to evaluate alfalfa interseeding into rangeland with different seeding dates, seeding rates, fertilizer rates, seed coating, using different mulches to cover the seedbed and mechanical alterations to the interseeder. The purpose of this trial is to help determine planting strategies for alfalfa interseeding into rangeland.

These plots were established on 1.32 acres located on the SE¹/₄, SW¹/₄, SE¹/₄, Sec. 22 T. 143 N., R. 96 W. at the ranch headquarters of the Dickinson Experiment Station. The 180 x 320 foot plots were arranged in a randomized block design with three replications. The soil was shambo loam. The range site was silty. Alfalfa varieties included were Ladak and Travois. The following treatments were used with a ten foot row spacing and three inch twisted chisel and 12 inch sweep behind coulter pair as a furrow opener.

Treatment	Seeding Date	Seeding Rate (PLS/row/acre)	Fertilizer Rate (N & P₂O₅/ac)	Sweep Tip	Pack Wheel	Seed Coating
Control	22 Apr 86	0.5 lb.	30 lbs. each	Cut off	On	No
Control	15 Apr 87	0.5 lb.	30 lbs. each	Cut off	On	No
Control	13 Apr 88	0.5 lb.	30 lbs. each	Cut off	On	No
High Seed Rate	22 Apr 86	1.0 lb.	30 lbs. each	Cut off	On	No
High Seed Rate	15 Apr 87	1.0 lb.	30 lbs. each	Cut off	On	No
Fall Seed	15 Oct 86	0.5 lb.	30 lbs. each	Cut off	On	No
High Fall Seed Rate	15 Oct 86	1.0 lb.	30 lbs. each	Cut off	On	No
High Fert Rate	22 Apr 86	0.5 lb.	60 lbs. each	Cut off	On	No
Mulch – (straw)	13 Apr 88	0.5 lb.	30 lbs. each	Cut off	On	No
Mulch – (hay)	13 Apr 88	0.5 lb.	30 lbs. each	Cut off	On	No
Mulch – (plastic)	13 Apr 88	0.5 lb.	30 lbs. each	Cut off	On	No
No Fertilizer	22 Apr 86	0.5 lb.	0 lbs. each	Cut off	On	No
Seed Coating	22 Apr 86	0.5 lb.	30 lbs. each	Cut off	On	Yes
Pack Wheel	22 Apr 86	0.5 lb.	30 lbs. each	Cut off	Off	No
Sweep Tip	22 Apr 86	0.5 lb.	30 lbs. each	On	On	No

Data that was collected from these plots were monthly alfalfa plant counts and monthly alfalfa plant heights.

1986, 1987 and 1988 Alfalfa Interseeding Techniques Trial

Location:	Dickinson Experiment Station Ranch Headquarters SE¼, SW¼, SE¼ Sec. 22, T. 143 N., R. 96 W.
Replications:	Three in a Randomized Block Design
Study Size:	180° x 320°
Plot Size:	20° x 100°
Alleys:	10°
Soil:	Shambo loam
Range Site:	Silty
Alfalfa Variety:	Travois, Ladak (with and without seed coating)
Seeding Date:	22 Apr 1986 15 Oct 1986 15 Apr 1987 13 Apr 1988
Seeding Rate:	0.50 PLS/row/acre 1.00 PLS/row/acre
Fertilizer Rate:	0 lbs. N and 0 lbs. P ₂ O ₅ /acre 30 lbs. N and 30 lbs. P ₂ O ₅ /acre 60 lbs. N and 60 lbs. P ₂ O ₅ /acre
Row Spacing:	10 feet
Furrow Width:	3 inches
Mechanical Adaptions:	with sweep tip on with packwheel off
Mulches:	oats straw ground up Crested wheatgrass hay ground up black plastic sheet covering up the furrow for two weeks
Control:	Spring seeding, 0.50 lb. PLS/row/acre, 30 lbs. N and P ₂ O ₅ per acre, 3" twisted chisel followed by 12" sweep behind coulter pair, sweep tip off, pack wheel, no seed coating.

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	Rep 1	Rep 2	Rep 3
1	High Fall Seed Rate	Packwheel Off	Sweep Tip On
2	Control	Fall Seed	No Fert
3	High Seed Rate	High Fert Rate	High Fall Seed Rate
4	Packwheel Off	Sweep Tip On	Seed Coat
5	Seed Coat	High Seed Rate	High Fert Rate
6	High Fert Rate	High Fall Seed Rate	Control
7	Fall Seed	No Fert	Fall Seed
8	Sweep Tip On	Control	High Seed Rate
9	No Fert	Seed Coat	Packwheel Off

Figure 5. Plot diagram for the 1986 alfalfa interseeding techniques trial at the Ranch Headquarters, Dickinson Experiment Station.

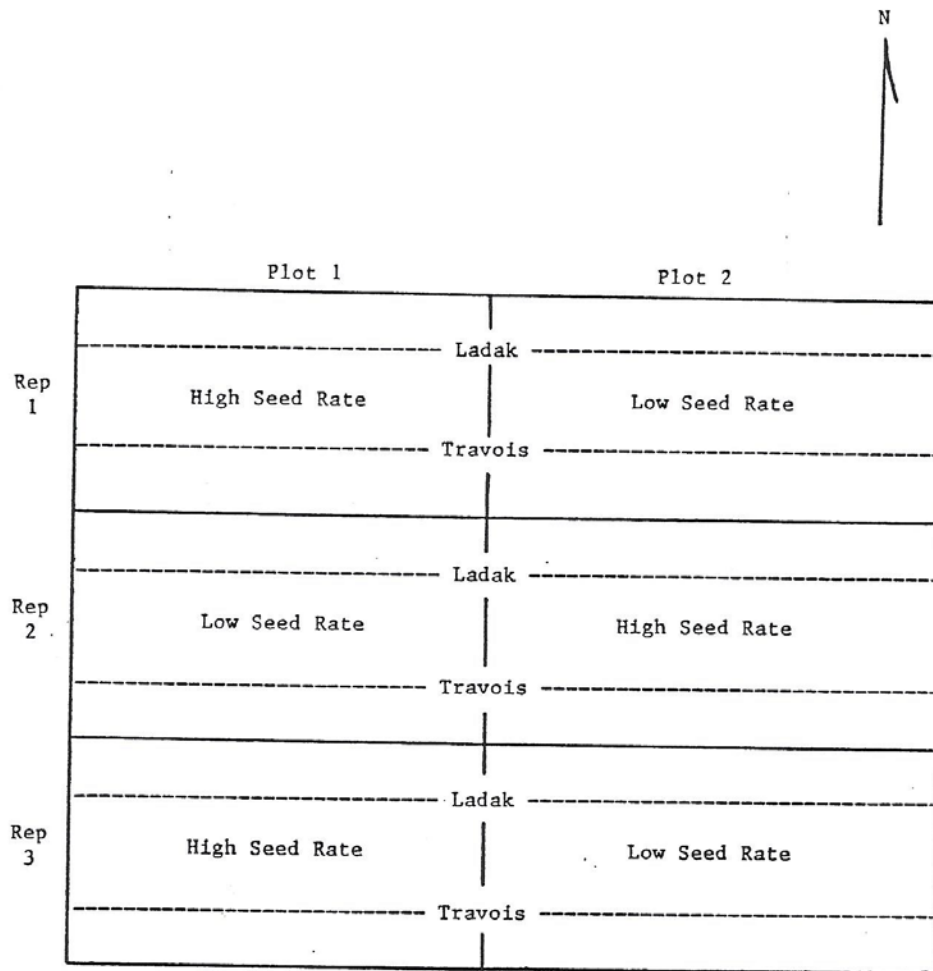


Figure 6. Plot diagram for the 1987 alfalfa interseeding techniques trial at the Ranch Headquarters of the Dickinson Experiment Station.

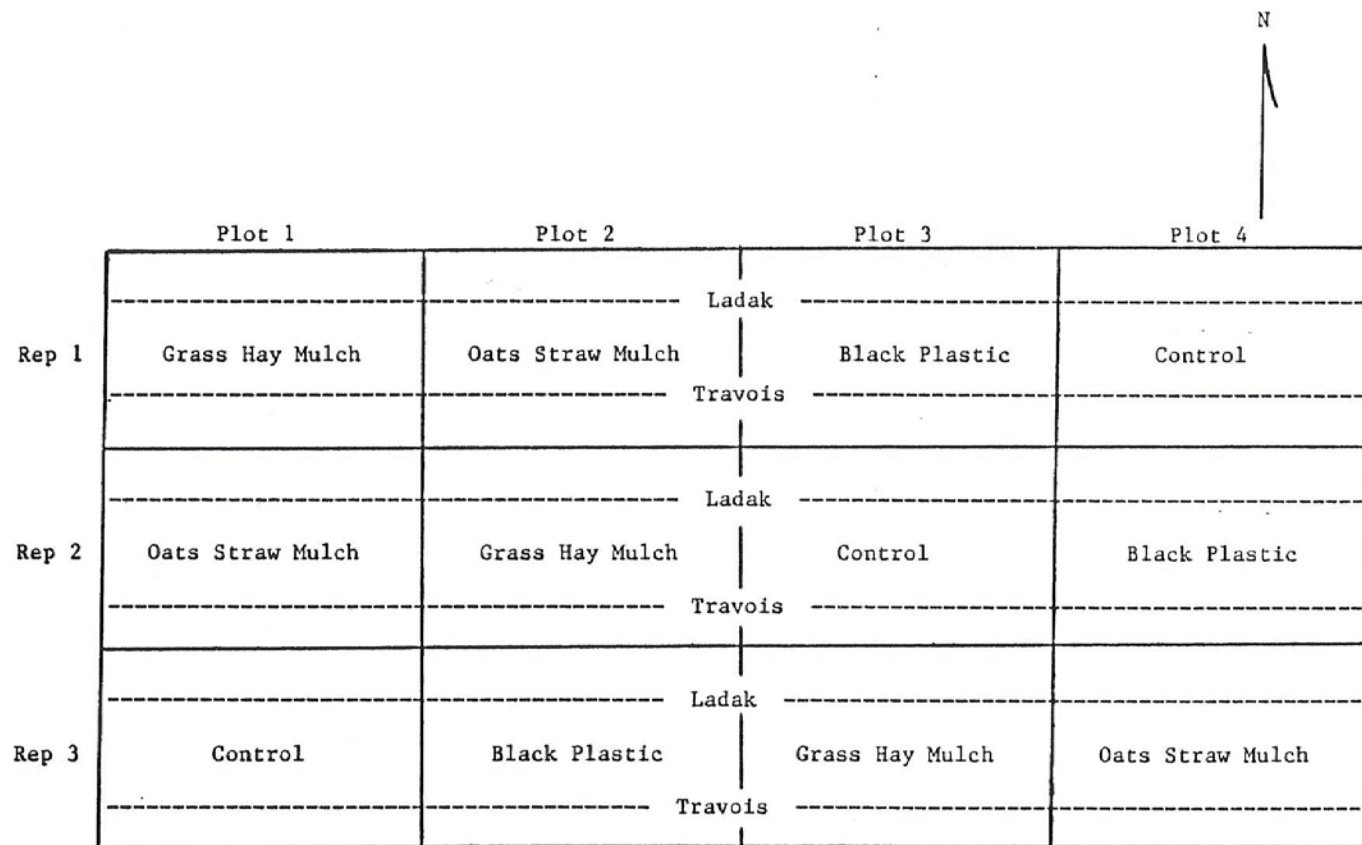


Figure 7. Plot diagram for the 1988 alfalfa interseeding techniques trial at the Ranch Headquarters of the Dickinson Experiment Station.

Table 37. Mean Alfalfa Plant Counts per Meter of Row for the 1986 Alfalfa Interseeding Techniques Trial at the Dickinson Experiment Station, 1988

Treatment	10 Jun	6 Jul	3 Aug	Mean
Control (22 Apr 1986)				
Ladak	4.47	4.67	4.43	4.49
Travois	4.40	4.87	5.07	4.78
Control (15 Apr 1987)				
Ladak	1.40	1.47	0.53	1.13
Travois	2.27	2.60	1.53	2.13
High Seed Rate (22 Apr 1986)				
Ladak	3.73	4.47	3.60	3.93
Travois	4.87	5.93	4.60	5.13
High Seed Rate (15 Apr 1987)				
Ladak	0.87	2.00	0.80	1.22
Travois	1.60	2.00	1.33	1.64
Fall Seed				
Ladak	0.47	0.20	0.07	0.25
Travois	1.73	1.13	1.00	1.29
High Fall Seed Rate				
Ladak	0.53	0.20	0.67	0.47
Travois	1.93	1.40	1.27	1.53
High Fertilizer Rate				
Ladak	4.47	5.20	5.07	4.91
Travois	5.20	6.07	6.27	5.85
No Fertilizer				
Ladak	3.33	3.53	3.27	3.38
Travois	4.00	4.80	4.20	4.33
Seed Coat				
Ladak	2.93	4.00	3.40	3.44
Travois	4.20	5.27	4.53	4.67
Pack Wheel Off				
Ladak	4.13	4.80	4.33	4.42
Travois	4.33	5.73	4.67	4.91
Sweep Tip On				
Ladak	3.47	4.07	3.13	3.56
Travois	4.93	5.93	5.87	5.58

Table 38. Mean Alfalfa Plant Heights in Centimeters for the 1986 Alfalfa Interseeding Techniques Trial at the Dickinson Experiment Station, 1988

Treatment	10 Jun
Control (22 Apr 1986)	
Ladak	20.16
Travois	18.75
Control (15 Apr 1987)	
Ladak	18.35
Travois	18.68
High Seed Rate (22 Apr 1986)	
Ladak	20.04
Travois	20.17
High Seed Rate (15 Apr 1987)	
Ladak	16.41
Travois	15.83
Fall Seed	
Ladak	17.41
Travois	17.13
High Fall Seed Rate	
Ladak	12.62
Travois	14.77
High Fertilizer Rate	
Ladak	21.80
Travois	20.43
No Fertilizer	
Ladak	19.18
Travois	19.96
Seed Coat	
Ladak	23.43
Travois	19.31
Pack Wheel Off	
Ladak	18.88
Travois	20.87
Sweep Tip On	
Ladak	21.17
Travois	19.88

Table 39. Mean Alfalfa Seedling Count per Meter of Row for the 1988 Alfalfa Interseeding Techniques Mulch Trial at the Dickinson Experiment Station, 1988

Treatment	10 Jun	6 Jul	3 Aug
Control (13 Apr 1988)			
Ladak	14.40	6.53	2.20
Travois	31.00	9.13	6.47
Black Plastic			
Ladak	17.67	7.53	3.27
Travois	20.60	9.53	2.20
Crested Wheatgrass Hay Mulch			
Ladak	0.33	0.13	0.07
Travois	2.20	1.13	0.73
Oats Straw Mulch			
Ladak	0.07	0.13	0.13
Travois	2.00	1.07	0.07

Table 40. Mean Alfalfa Seedling Heights in Centimeters for the 1988 Alfalfa Interseeding Techniques Mulch Trial at the Dickinson Experiment Station, 1988

Treatment	10 Jun
Control	
Ladak	2.55
Travois	2.65
Black Plastic	
Ladak	3.24
Travois	3.01
Crested Wheatgrass Hay Mulch	
Ladak	2.90
Travois	2.32
Oats Straw Mulch	
Ladak	2.10
Travois	2.30