

Defoliation of Native Range Study

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Defoliation of native range plants by livestock grazing has variable effects on the major grass species at different phenological stages of growth. These variable effects caused by variable season of use are only rudimentarily understood at the present time from a limited amount of different treatment times. It is logistically and economically unprudent to conduct a large number of season of use treatments using grazing livestock on pasture. To provide the needed data on the effects of defoliation of range plants at a large number of season of use treatments a mechanical defoliation study will be conducted in the field with similar treatments on potted plants in a green house. This study will be conducted as a part of Project 1786 Grazing Effects on the Structure and Dynamics of Grassland Ecosystems.

The field study will be conducted on replicated small plots at the Dickinson Experiment Station, Ranch Headquarters. A mowing machine will be used to defoliate the range vegetation to a one inch height, once a week on Wednesdays on appropriate plots. Similar defoliation treatments will be conducted on potted plants in a greenhouse on the NDSU campus. Field plots will be evaluated annually between 15 July and 15 August by the ten pin point frame method. Defoliation treatments will start in the spring of 1988 and be conducted for four years. The fifth year will have no defoliation treatments but each plot will be sampled for above and below ground plant production and changes in soil microorganisms. Grass leaf height and plant phenological data will also be collected.

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Location:	Dickinson Experiment Station Ranch Headquarters Pasture 3: NW¼, NE¼, SW¼, Sec. 22, T. 143N, R. 96 W.		
Replications:	Three	Randomized Block Design	
Study Size:	100 feet x 168 feet	0.386 acres	
Plot Size:	14 feet x 25 feet	0.008 acres	
Perimeter Border:	5 feet		
Soil:	Morton silt loam (49B)		
Range Site:	Silty		
Treatments:			# of Defoliations
A:	No Defoliation		0
B:	15 May – 15 Nov		24
C:	15 May – 15 Aug		12
D:	15 Aug – 15 Nov		12
E:	15-30 May, 15-31 Aug		4
F:	01-15 Jun, 15-31 Aug		4
G:	16-30 Jun, 15-31 Aug		4
H:	01-15 Jul, 15-31 Aug		4
I:	01-30 Apr	3 or 4	
J:	01-31 May		4
K:	01-30 Jun		4
L:	01-31 Jul		4
M:	01-31 Aug		4
N:	01-30 Sep		4
O:	01-31 Oct		4
P:	01-30 Nov		3 or 4
