1-1-1900

Alfalfa-Grass Pastures for Beef Cattle

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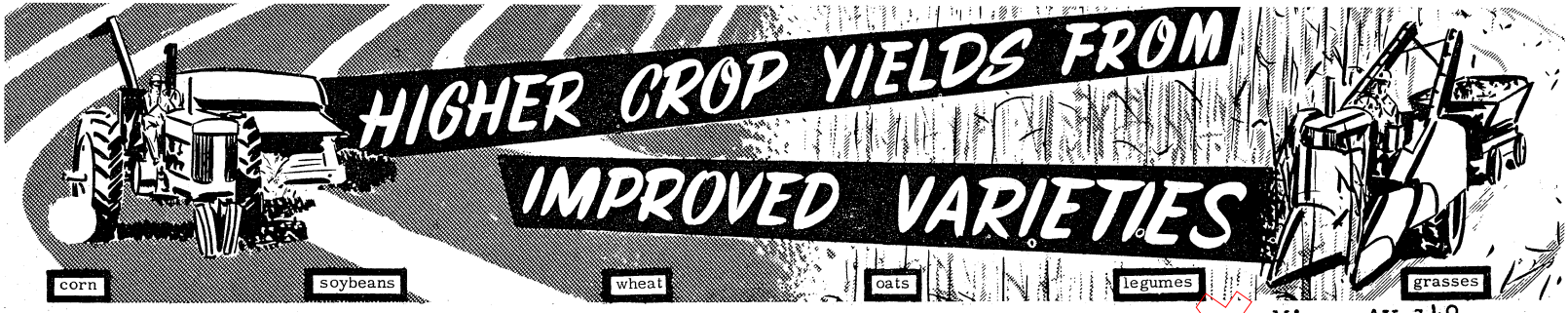

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Purdue University
Agricultural Extension Service
Lafayette, Indiana

ALFALFA-GRASS PASTURES FOR BEEF CATTLE
Miller Purdue Farm, Upland, Indiana

Prepared by W. M. McVey, H. N. Wheaton and G. O. Mott

Mixtures of alfalfa-orchardgrass, alfalfa-fescue and alfalfa-bromegrass were established in 1952. Ranger alfalfa, Commercial orchardgrass, Alta fescue and Lincoln bromegrass were the varieties used in this trial. A uniform application of 350 pounds per acre of 0-20-10 fertilizer was applied to all mixtures, and each pasture was grazed under a three-paddock rotation grazing system. Yearling Hereford steers, which were wintered on the farm, were used as grazing animals to measure the nutritive value and carrying capacity of the pastures. The pastures were grazed for four years--1953, 1954, 1955 and 1956. The grazing season varied from 140 to 189 days, depending on the earliness of growth in the spring and the moisture supply late in the season.

Beef Per Acre

The amount of beef per acre depends both upon the gain per steer and the carrying capacity of the pasture. The alfalfa-bromegrass misture produced the most beef per acre with the smallest number of animals. This resulted from the much greater gain per steer on the alfalfa-bromegrass. Alfalfa-fescue had the largest carrying capacity but the lowest production of beef per acre.

Table 1. Beef Production Per Acre on Alfalfa-Grass Pastures

Grazing Season		Pounds of Beef Per Acre		
Year	No. Days	Alfalfa-Orchardgrass	Alfalfa-Fescue	Alfalfa-Bromegrass
1953	140	275	278	263
1954	168	333	277	323
1955	189	334	299	417
1956	140	215	168	316
	Average	289	256	330

Average Daily Gain Per Steer

Without exception the average daily gain of the steers on alfalfa-bromegrass exceeded that of the other two mixtures. The first year the steers on alfalfa-fescue showed a greater daily gain than the alfalfa-orchardgrass, but this was reversed during the other three years. The averages for the four years show that the steers on alfalfa-bromegrass had an average daily gain of .47 pounds greater than alfalfa-fescue and .38 pounds greater than alfalfa-orchardgrass.

Cooperative Extension Work in Agriculture and Home Economics, State of Indiana, Purdue University, and the United States Department of Agriculture Cooperating. L. E. Hoffman, Director, Lafayette, Indiana. Issued in furtherance of the Acts of May 8 and June 30, 1914.

Table 2. Average Daily Gain Per Steer on Alfalfa-Grass Pastures

Grazing Season Year	No. Days		Pounds Gain Per Steer Per Day: Alfalfa-Orchardgrass	Alfalfa-Fescue	Alfalfa-Bromegrass
1953	140		.86	1.02	1.38
1954	168		.97	.79	1.22
1955	189		.82	.72	1.12
1956	140		.74	.53	1.21
		Average	.85	.76	1.23

Carrying Capacity

The amount of feed units produced by each of the mixtures would indicate that about the same number of animals could be grazed. This is based on the assumption that the steers graze about the same amount of forage per day on each mixture. However, in these trials it was found that the steers grazed the mixture of alfalfa-bromegrass more readily, so apparently more forage was consumed per animal each day. The result was fewer animals being required per acre. The alfalfa-fescue had the greater capacity because of a lower consumption rate (more steers required to graze the forage available), even though the yield of feed units was slightly below that of orchardgrass.

Table 3. Average Carrying Capacity (No. Steers Per Acre) on Alfalfa-Grass Pastures

Grazing Season Year	No. Days		Average Number of Steers Per Acre: Alfalfa-Orchardgrass	Alfalfa-Fescue	Alfalfa-Bromegrass
1953	140		2.3	2.0	1.4
1954	168		2.0	2.1	1.6
1955	189		2.2	2.2	2.0
1956	140		2.1	2.3	1.9
		Average	2.1	2.2	1.7

Yield of the Mixtures in Feed Units

The pounds of feed units (expressed as Total Digestible Nutrients or T.D.N.) consumed from each mixture were estimated by calculating the feed requirements of the steers needed to graze the forage produced by each mixture. There was little difference in the production of orchardgrass and fescue in combination with alfalfa over the four-year period. The mixture of alfalfa-bromegrass was lower yielding the first two years but equalled orchardgrass and fescue during the last two years of the trial.

Table 4. Consumption of Feed Units Per Acre on Alfalfa-Grass Pastures

Grazing Season Year	No. Days		Pounds of Feed Units (T.D.N.) Per Acre: Alfalfa-Orchardgrass	Alfalfa-Fescue	Alfalfa-Bromegrass
1953	140		2646	2326	1817
1954	168		2852	2768	2373
1955	189		3284	3245	3253
1956	140		2353	2408	2420
		Average	2784	2687	2466