Table 60

Effect of Certain Climatic Factors on the Period Average Daily Gains of Yearling Heifers.

Dry-Lot Fattening Period—June 26, 1957, to November 13, 1957—140 days.

Period	1	2	3	4	5
Date	6/26–7/24	7/25–8/21	8/22–9/18	9/19–10/16	10/17–11/13
Av. maximum temp.[1]	92.8	97.4	84.0	73.3	56.6
Av. minutes of sunshine[2]	599.2	665.8	516.2	397.1	234.1
Av. radiation[3]	526.4	578.3	434.0	318.8	191.7
Av. wind movement[4]	141.0	145.3	131.3	133.4	141.3
Av. relative humidity[5]	47.6	46.3	52.0	56.5	56.5
Av. daily gain:					
Lot 1 (sun)	1.89	1.16	2.79	2.07	1.57
Lot 2 (sun)	1.84	1.11	2.27	2.79	1.82
Lot 3 (shade)	2.29	1.36	2.59	2.21	1.96

1. Reading made daily at 7 p.m.; thus maximum temperature will have occurred. Thermometer in standard thermometer shelter.
2. Number of minutes the sun shone during the day. Period midnight to midnight.
3. Reading in langleys. Langleys × 3.69 = BTU's per square foot.
4. Wind movement is miles past the station.
5. Read from an autographic hygrograph exposed in thermometer shelter.

The Effect of Shade and Hormone Implant on Fattening Yearling Heifers.

June 26, 1957, to November 13, 1957—140 days.

F. W. Boren, B. A. Koch, E. F. Smith, D. Richardson, R. F. Cox

Five heifers in lots 1, 2 and 3 of the shade vs. no shade study were randomly selected to receive an implant composed of 20 mg. of estradiol benzoate and 100 mg. of testosterone. Since they were fed along with the non-implanted heifers in each lot, no feed efficiency data is available.

Table 61 shows the results of this phase of the study. Although the numbers are small, some general observations can be made. These are as follows:

1. Shade exerted a definite influence upon the average daily gains. The implanted heifers in the shade gained .12 pound more per head daily than the implanted heifers in the sun. Heifers receiving no hormone implant in the shade gained .16 pound more per head daily than the non-implanted heifers in the sun. Thus shade increased gains an average of .14 pound per head per day regardless of hormone implant.

The hormone implant increased average daily gains .30 pound in the sun lots and .26 pound in the shade. Thus the implant increased average daily gain per head .28 pound.

The combined influence of shade and implant was .42 pound increase in average daily gain per head.

2. The implanted heifers had a slightly higher dressing percentage than did the non-implanted heifers.
3. Shade influenced carcass grade. The average carcass grade of the heifers in the sun lots was just slightly over average good, whereas the shaded lot heifer carcasses graded high good.
4. The average square inches of rib eye muscle were greater in the implanted heifers. Shade apparently had no influence upon the size of rib eye muscle.
5. The implant caused no excessive development of teats and udder, raised tail heads or depressed loins.

Table 61

The Effect of Shade and Hormone Implant[1] on Fattening Yearling Heifers.

June 26, 1957, to November 13, 1957—140 days.

	No shade		Shade	
	No implant	Implant	No implant	Implant
Number of heifers	10	10	5	5
Initial wt. per heifer, lbs.	535	524	532	528
Final wt. per heifer, lbs.	786	816	805	838
Av. gain per heifer, lbs.	251	292	273	310
Av. daily gain per heifer, lbs.	1.79	2.09	1.95	2.21
Dressing percent	58.1	58.5	57.8	58.2
Carcass Data				
Carcass grades, USDA:				
Av. choice	..	1	..	..
Low choice	2	2	4	2
High good	..	1	..	1
Av. good	3	1	..	..
Low good	5	5	1	2
Av. carcass grade[2]	17.2	17.4	18.4	17.6
Av. size of rib eye[3]	4.3	4.3	4.4	3.8
Av. size of rib eye, sq. in.[4]	9.8	10.3	9.8	10.7
Av. thickness of fat at 12th rib[5]	4.1	4.0	3.4	3.8
Av. thickness of fat at 12th rib, in.[6]	.51	.55	.59	.53
Av. degree of marbling[7]	8.0	7.2	7.4	8.0
Av. degree of firmness[8]	4.3	3.7	3.2	3.6

1. 20 mgs. estradiol benzoate plus 100 mgs. testosterone supplied by Squibb and Sons.
2. Av. choice, 20; low choice, 19; high good, 18; av. good, 17; low good, 16.
3. Very large, 1; large, 2; moderately large, 3; modestly large, 4; slightly small, 5. Visual estimate.
4. Planimeter reading of rib eye muscle.
5. Very thick, 1; thick, 2; moderately thick, 3; modestly thick, 4; slightly thin, 5. Visual estimate.
6. Reciprocal Meat Conference Standards—1952.
7. Modest, 6; small amount, 7; slight amount, 8; traces, 9. Visual estimate.
8. Very firm, 1; firm, 2; moderately firm, 3; modestly firm, 4; slightly soft, 5; soft, 6. Visual estimate.

Adapting Roughages Varying in Quality and Curing Processes to the Nutrition of Beef Cattle (Project 370—1957-58).

Combinations of Wheat Straw and Alfalfa Hay in the Winter Ration of Beef Heifers.

F. W. Boren, B. A. Koch, E. F. Smith, D. Richardson and R. F. Cox

Previous work at this station (Circular 297, p. 45-47) and at the Fort Hays Branch Experiment Station (Circular 322, p. 1-6) indicates that beef calves wintered on a daily ration of 1.75-2 pounds of ground sorghum grain, 1.25-2 pounds of protein concentrate and wheat straw fed free-choice made average daily gains of only .3 to .6 pound. One pound of molasses substituted for 1 pound of grain and sprinkled on wheat straw increased consumption only .22 pound per head daily but decreased gains .08 pound per head daily. Also 1 pound of molasses had slightly less feeding value than 1 pound of grain in a wintering ration for steer calves with wheat straw roughage. The addition of 1 pound of dehydrated alfalfa pellets increased the rate of gain and feed efficiency. Calves receiving dehydrated alfalfa pellets also consumed more straw.

Although wheat straw is considered a very poor roughage and under normal conditions should not be used as the only roughage for cattle, there are times when it can be used as a major part of the roughage. The