

1934

ANNUAL REPORT

of

L. I. CASE,

AGENT IN ANIMAL HUSBANDRY,

RALEIGH, N. C.

Covering Work with Beef Cattle and
Related Livestock Production, Mar-
keting and Meat Utilization Projects
in Areas Released from Quarantine.

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I. BEEF CATTLE

1. Crop Gleanings

The results of three years' work in Currituck County was reported last year with the following summary and conclusions.

A summary of the three years' work showed that 2.9 acres of gleanings of which 56 per cent were corn stalks, which had yielded an average of 39 bushels per acre and 44 per cent were soybean stalks, which had yielded an average of 17 bushels per acre had maintained one beef animal of 574 pounds average weight for about 100 days with an average daily gain of .359 pounds.

Conclusions that may be drawn from this work are that dry cows and mature or nearly mature cattle can be wintered reasonably well for approximately 100 days on a sufficient acreage of crop gleanings from corn and soy bean crops.

Cows nursing calves and young cattle weighing less than 500 pounds should have supplementary feed.

In explanation of the phrase "sufficient acreage" it should be said that this will depend upon the size and maturity of the animals and upon the amount of foliage remaining in the fields. While there is a relationship between the grain yield and the carrying capacity of the gleanings it is not a direct one. In other words, corn that produced 50 bushels per acre will carry more cattle on a given acreage than will 25 bushel corn, but not twice as many.

In corroboration of these results the writer visited a farm recently on which the owner had wintered 39 head of grade Hereford cattle on corn and soybean stalk fields. They were mainly dry cows with a few two year old steers. These cattle had been furnished no shelter and no feed except what they had rustled for themselves in the fields and on April 18 when permanent pasture was about ready for grazing they were in what any one would call excellent breeding condition.

2. Steering and Hogging Down Corn and Velvet Beans

Velvet beans are grown to some extent in the southeastern part of our state. As a rule the corn is gathered and the velvet beans left in the field for grazing and soil improvement. Close observation on one farm has shown that cattle winter very well on this kind of feed where sufficient acreage is provided and the cattle not kept on a given area too long.

In order to determine if it was practical to leave the corn on the stalks and steer it down a record was kept in the winter of 1933-1934.

Twenty acres of corn and velvet beans were used in the trial and one-half the corn was gathered as it was a share crop. There was approximately 225 bushels of corn remaining in the field. There was no

practical way of measuring the yield of velvet beans but there was a good stand of well fruited and well matured beans. (Rate of seeding, 1 peck per acre).

The trial started November 21 and 30 head of steers averaging 604 pounds per head and 26 head of hogs averaging 125 pounds were turned in the field.

Steers were taken off January 2, 1934.

Hogs were taken off January 4, 1934.

Eighteen heifers were put in the field with the steers December 19 and taken off January 16.

Total cattle days	1901
Total cattle gains	3415
Average daily gains all cattle	1.896
Average daily gains 30 steers	2.05
Total hog gains	1265
Average daily hog gains	1.105

Without taking the velvet beans into account it required 269.23 pounds of corn, shelled basis, to produce 100 pounds of beef and pork.

Second Trial

The second year's work, 1934-1935, sixty-five head of cattle gained 3820 pounds in 37 days and 104 head of hogs gained 4915 pounds in 40 days.

The average daily gains of the cattle were 1.59 pounds while the hogs gained 1.18 pounds per head per day.

Again, not taking the velvet beans into consideration, it re-

quired 320.54 pounds of corn shelled basis, to produce 100 pounds of beef and pork. The higher corn requirement this year compared with last can be explained by the velvet bean crop which was decidedly inferior to the previous year. There were less beans and a high percentage of the leaves were eaten by worms.

Conclusions

Two years' work indicates that it is practical to utilize corn and velvet beans grown together for fattening cattle and hogs for at least the start of the feeding period.

It is planned to continue this work and if possible a larger acreage will be used with the idea of carrying the stock more completely thru the entire fattening period.

3. Purebred Hereford Bull versus Scrub

The beef cattle work carried on at the Blaciland Test Farm, Wenona, N.C., well demonstrates the value of a purebred bull.

The plan of the experimental work carried on for several years at this station involved the use of a registered Hereford bull and a native scrub bull. Each was used on a group of native cows and the offspring grown out and fattened for slaughter as a part of the Bureau of Animal Industry Quality of Meats Project. Each year the natives and grade animals were fed separately and records kept of the amounts of feeds consumed and the gains made.

The fourth and final year of this particular phase of the work was completed in March 1934. During the 140 day feeding period the Natives made an average daily gain of 1.73 pounds and the Grades 2.40 pounds. Not only did the Grades make 87 pounds greater average gain than the Natives, but they required 75 pounds less shelled corn,

29 pounds less cottonseed meal, and 133 pounds less soybean hay to produce 100 pounds gain. In other words, it cost \$2.16 less per cwt. to fatten the Grades than the Natives.

The Grades also ran about a full grade higher in quality than did the Natives and dressed 2.22 per cent higher.

In the four trials the grade yearlings made greater gains, required less feed to make 100 pounds of gain, and graded at least one full grade higher than the Native yearlings. The average cost of the gains was also \$1.31 per cwt. in favor of the grades.

4. Fall versus Spring Calves

For the past several years careful observation has shown a decided disadvantage in late summer and fall calves as compared with those dropped in the spring. This disadvantage has been evidenced by poor condition of cows nursing calves in the winter, general unthriftness and emaciation of calves and in some cases death loss of cows, calves, or both. Observation further showed that calves which had a serious set back the first few months of their lives through lack of nourishment, did not later respond to good treatment as compared with those which had made normal growth.

In order to obtain some concrete evidence along this line, records of the first summer's gains on a number of both fall and spring calves were kept. The average gains from May 1 to November 1 on fall dropped calves were 199.55 pounds as compared with 271.5 pounds on spring dropped calves.

5. Value of Manure

Work of special interest relative to the value of manure on a specialized crop was started this year in cooperation with the Horticultural Department.

Some of the leading peach growers in the sand hill section of our State place a high value on stable manure for use in peach orchards and there is some evidence of its value. In order to obtain some definite information, a rather extensive experiment was started in cooperation with an orchard man in Moore County this year. Several blocks of trees were treated with varying amounts of cattle manure in conjunction with varying amounts of commercial fertilizers. This work will be carried on for several years and records kept of the size, color, and quality of the fruit as well as the time of annual budding in relation to frosts, and the longevity of the trees.

6. Trench Silos

The use of trench silos for better winter feeding has been vigorously pushed by both Dairy and Animal Husbandry specialists for the past three years. There were no silos of this type in the State in 1930. A few were dug in 1931, and since then their popularity has been growing rapidly. In 1934 alone 372 new ones were built, bringing the total up to 578 now in use in the State.

7. Above-ground Trench Silo

There are many sections of eastern North Carolina where the water table is so close to the surface in the winter months that it is impractical to use even a partial underground trench for ensilage. The Blackland Experiment Station is located in such a section. On this Station

an entirely above ground trench silo was built in the fall of 1934. It was patterned after the partial under ground silos in use in South Carolina with some modifications.

The capacity of this silo was somewhere between 30 and 35 tons and the cost of materials was \$133.86. Labor charges were - man labor 337 hours at 20 cents, \$67.40; horse labor, 44 hours at 10 cents, \$4.40, making a total cost of \$210.66. This cost is entirely too high and it is planned to work out ways of reducing costs on this type of silo.

Several different ways of covering the silage were tried but complete details of this are not now available.

8. Fattening for Market

Fourteen loads of cattle were fed for the market under the more or less careful guidance of the Animal Husbandry specialist. Help was given in actual selection of the feeders or advising where to buy; rations; length of feeding period; and where and when to market.

It was not possible to get careful data on the results of this feeding work but where the cattle were laid in prior to the first of the year, needless to say, good profits were made.

One cooperator who feeds manure for the manure for fertilizing his peach orchard reported on four loads of good yearling Hereford steers purchased on the Kansas City Market in September as follows: Profit \$2600.00 plus about 1,000 tons of manure. It will no doubt be interesting to know that this man places a high value on manure, stating that it is worth from \$8.00 to \$10.00 per ton on his sandy soil where peaches are mainly grown in this State.

9. Cattle Importations from Drought Areas

Following a meeting at Knoxville, Tenn. last November in which representatives of the A.A.A. and B.A.E. presented the situation in the western drought areas relative to the forced selling of cattle and the resulting outlook, much time and effort was expended in attempting to get our farmers who needed cattle, to buy them. A circular letter to all County Agents and a special list of farmers was followed by a special feature news article, several short articles, five district meetings, and the sending out of many personal and circular letters giving specific information as to when, where and how to buy cattle.

Fifteen car loads were brought in from Kansas City, Fort Worth and Oklahoma City to the writer's personal knowledge and several truck loads came in from across the line in Virginia but we could have used many times that number to good advantage.

10. Drought Cattle

Four weeks were spent in June and July working with N.C.E.R.A. in helping to locate pastures for drought cattle. Also many trips were made after the cattle arrived in helping to straighten out difficulties that came up.

II. PASTURES

1. Best Pasture Mixtures on Various Soil Types.

Several tests, demonstrations and observations have been made in various sections of Eastern North Carolina concerning the best adapted pasture plants on various soil types.

The results to date show that common Lespedeza is almost universally adapted on coastal plains and tidewater soils. Of the grasses, Carpet grass seems best suited on fine sandy loams where sufficient moisture is available. Carpet grass, however, requires a firm seed bed and does not thrive on too loose or fluffy soil. On soil that is favorable to Carpet Grass it is not long tolerant of other plants growing with it. Observation points to applications of phosphate favoring Lespedeza holding its own with Carpet Grass. The same no doubt applies to other legumes. Dallis Grass also seems to be well adapted to fine sandy loam soils and will thrive further west into the edge of the Piedmont sections of the State better than will Carpet Grass. It apparently will stand either quite moist or dry conditions. On black, peaty soils Blue Grass and Red Top are best adapted of the grasses, while on dry, sandy soils Bermuda is about the only grass that will thrive.

2. Carrying Capacity of Pastures

This phase of pasture work has been carried on and reported for the past four years. The following is a repetition of previous reports with 1934 records added.

In order to get some measure of the carrying capacity of pastures of various kinds records have been secured on several farms in different parts of Eastern North Carolina. In Jones County in 1931, a six year old pasture consisting of Carpet Grass, Lespedeza with some Dallis Grass produced 2960 pounds gain on 26 small steers from June 3 to September 8. This was at the rate of 203.45 pounds per acre. This pasture was grazed or had stock on it the greater part of the year, and furnishes good grazing from May 1 to about November 1, ordinarily.

Records in Currituck County showed beef cattle gains of 294.31 pounds per acre from May 1 to October 28. This was produced on a rather mediocre pasture.

In 1933 gains on beef cattle on Carpet Grass and Lespedeza pasture were 330 pounds per acre from April 26 to October 25. This same pasture produced 310.7 pounds gain per acre in 1934.

From these records it seems safe to conclude that well established pasture of Carpet Grass and Lespedeza will, a normal season, produce about 300 pounds gain on beef cattle.

With grass beef selling locally at 4 cents per pound as it did in 1933 and 1934 pasture is a more profitable crop than cotton which made an average net profit of \$8.46 per acre during these years.

3. Pasture Fertilization

A resumé of three years' work in the fertilization of pasture on the farm of E. E. Bell, Pollockville, Jones County, North Carolina.

The pasture area consisted of 14.2 acres of an even stand of pasture plants, practically free of weeds. Carpet grass, lespedeza, Dallis grass, low hop clover, Kentucky blue grass, and white dutch clover made up the pasture mixture with Carpet grass predominating. The soil is of sandy loam type with a clay sub soil and having a pH of 6.37 at the beginning of the test.

The pasture was divided equally by a fence and for three years, 1932, 1933 and 1934 one side was fertilized at the rate of 400 pounds per acre of a 4-3-4 mixed fertilizer. The fertilizer was applied in one application about one month before the spring growth started.

1932

The early growth which consisted mainly of low hop clover with some Blue Grass showed up very favorably for the fertilizer plat but it soon turned dry and remained subnormally so for the entire season, therefore no results of consequence were obtained.

1933

In 1933 the grazing season lasted from April 26th to October 25, or 182 days. The number of cattle days on the fertilized plat was 2217, and 1615 days on the unfertilized plat. In other words, the fertilized plat carried an average of 12.18 head of cattle, averaging 498 pounds at the beginning of the grazing season, for 182 days, while the unfertilized area carried an average of 8.87 head of cattle, averaging 526 pounds for the same length of time.

The total gain on the fertilized plat was 3906 pounds or 550 pounds per acre while the unfertilized plat produced 2346 pounds gain or 330 pounds per acre. These gains seem somewhat excessive and perhaps include some fill, although the cattle were weighed at the same time of day and as nearly as possible under the same conditions each time. In any case, the difference in gains on the two plats represents fairly accurately the value of the fertilizer. This, however, should not be all credited to the one year's application as there was no doubt some carry over from the previous year which was unusually dry.

1934

The grazing season was shorter than in 1933, being from May 9 to October 24 - or 168 days. The number of cattle days was 2614 on the fertilized plat and 2062 on the unfertilized plat. Putting this another

way, the fertilized plat carried an average of 15.55 head of cattle, averaging 425.81 pounds at the start of the grazing season, for 168 days, while the unfertilized area carried an average of 12.27 head of cattle, averaging 433.66 pounds, for the same length of time.

The total gain on the fertilized plat was 2493 pounds or 351.12 pounds per acre, while the unfertilized plat produced 2206 pounds gain or 310.70 pounds per acre.

Pasture on both plats was not as good in 1934 as in 1933 due to some winter killing of carpet grass and not as favorable a season generally. In 1933 the pasture was undergrazed which explains the heavier stocking in 1934. It is felt, however, that this was a mistake, in view of the results. This was especially true the last 28 day period on the fertilized plat when a loss of 12 pounds resulted as compared with a gain of 372 pounds on the unfertilized area. Weights were taken on three successive days at the start of the grazing season and an average of these three weights was used as the initial weight. The average of the three weights was 15 pounds per head heavier than the first weight.

Summary and Conclusions

The total cost of the fertilizer for three years, not including the labor of applying, was \$14.50 per acre. The additional per acre gains in weight of cattle grazed on the fertilized plat compared with the unfertilized, for the three years was as follows: 1932 - 212 lbs.; 1933 - 220.0 lbs.; and 1934 - 40.42 lbs. or a total of 262.54 pounds. The necessary selling price of grass cattle in order to break even, would therefore be 5.53 cents per pound. This does not tell the whole story, however, for there will no doubt be a carry over benefit from the fertilizer for several years to come. In fact, on May 1, 1935, the growth on the fertilized plat is very markedly superior to that on the unfertilized area.

4. Value of Reeds (Arundinaria tecta)

Native reeds which grow in many sections of Eastern North Carolina have been utilized to some extent for grazing cattle. There are, however, many thousands of acres that are bringing in no revenue of any kind.

In order to get some measure of the value of reeds for grazing beef cattle, weight records were kept on a herd of cattle for three consecutive years. These records showed that 29 cows, weighing an average of 596.21 pounds at the beginning of the grazing season, about May 1, gained an average of .39 pounds per head per day for 227 days on reed pasture while nursing calves. Twenty-four nursing calves which averaged 131.73 pounds at the beginning of the season gained an average of .994 pounds per head per day.

Putting this another way, 29 cows and 24 nursing calves on 160 acres of reed pasture, made total gains of 6721.54 pounds for 7½ months grazing season. It has been further found that by weaning the calves at about 8 months of age or from Nov. 8th to 23 the dry cows may be carried satisfactorily for about two more months on reeds by putting them on an area that had not been grazed previously the same year. Records for 1932, 1933 and 1934 show that dry cows carried this way for an average of 68 days after the calves were taken from them about hold their own.

In order to see how much further reeds could be utilized for wintering cattle on November 23rd, 1934, fifteen yearling steers were put on 32 acres of ungrazed reeds and left there until March 24th. During this 70 day period they lost an average of .17 pound per head daily but were in strong condition. On March 15th they showed an average daily gain of .14 lb. and on March 1st an average daily gain of .43 lb.

5. Annual Pastures

For the past few years it has been observed that annual pastures fill an important place in proper maintenance of cattle during the grazing season. Such pastures are especially valuable when permanent pastures are inadequate due to drought or other causes. Used in this way they are often referred to as emergency or insurance pastures. Crops that lend themselves nicely for this use are soy bean, Sudan grass, lespedeza, oats, sweet clover or a combination of two or more of these plants. They may be harvested for hay or seed, or turned under for soil improvement if not needed for grazing.

The following excerpt from a letter received in August, 1934 from a cooperator will no doubt be of interest.

"I have approximately fifty head of cattle in my herd this season (consisting of about twenty cows, about twenty yearlings and two year olds and about a dozen suckling calves.)

About the middle of April this herd went on twenty five acre field of lespedeza and sweet clover and grazed it until the 20th of June. The cattle were taken off of this field on that date and the field has the promise of producing a fine crop of lespedeza seed.

On the 20th of June the cattle went on a fifteen acre field of lespedeza. A crop of oat hay was taken off of this field in May. The cattle were maintained on this field until the first of August.

On the first of August the cattle were transferred to another lespedeza field of about seventeen acres from which a fine crop of oats was harvested in June. It is expected that this field will feed the cattle well into September, and that this field, together with the field mentioned in the preceding paragraph will take care of the cattle thru October."

MISCELLANEOUS

In addition to the foregoing which is largely a report of more or less definite experimental projects, considerable time was spent along strictly extension lines as outlined below.

Selection of breeding stock for individual farmers including stallions, jacks, bulls, rams, purebred and grade females, and feeder cattle.

The placement of bulls deserves especial mention. Four outstanding herd bulls were imported to this State for use in purebred herds. The writer has been greatly interested for the past four years in development of some real purebred herds in the State for the purpose of raising herd bull material for smaller herds. The importation of these bulls is, we hope, a decided step toward this end. The use of such bulls, together with proper culling of females, feeding and care has the promise of developing herds that will attract attention in the South.

Advice regarding breeding, feeding and management problems.

Selection of sites for trench silos and advising as to methods of construction, filling and covering.

Supplying plans and specifications for barns, feeding sheds, dehorning clutes, silos, etc.

Culling of herds and flocks.

Control of parasites and diseases of cattle and sheep.

Docking and castrating demonstrations.

Demonstrations in shearing and proper handling of wool.

Marketing of cattle, sheep and wool.

Judging demonstrations

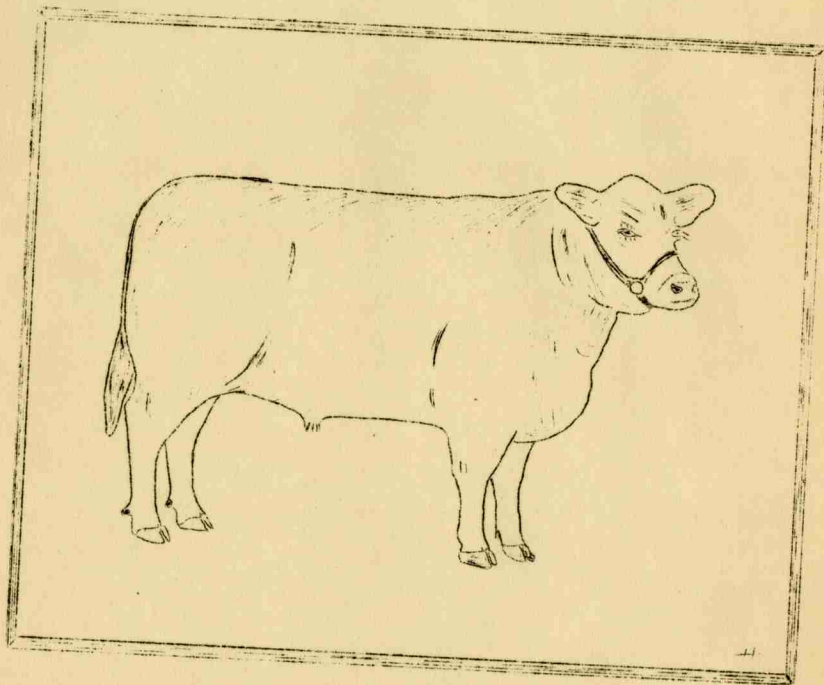
Pasture establishment and management.

Formation of North Carolina Livestock Producer's Association and serving as secretary of same.

Selection of animals for show and advise in regard to feeding, fitting and showing.

Preparation of news articles and circulars, samples of which are shown on the following pages.

INSTRUCTIONS IN BABY BEEF PRODUCTION FOR 4-H CLUB MEMBERS



NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
U. S. DEPT. OF AGRICULTURE COOPERATING
N. C. AGRICULTURAL EXTENSION SERVICE
I. O. SCHAUB DIRECTOR
RALEIGH, N. C.

BABY BEEF PRODUCTION FOR 4-H CLUB MEMBERS

By L. I. Case, Agent in Animal Husbandry
North Carolina State College.

CLASSES

The classes for 1935 will be as follows:

Senior Baby Beeves - Calved between Jan. 1, 1934 and August 31, 1934.

Junior Baby Beeves - Calved between Sept. 1, 1934 and April 30, 1935.

SELECTION OF CALVES

In view of the fact that there will be county group classes as well as individual competition, it will be well for all calves fed in a county to be as uniform as possible in general conformation and quality. Each club member may select his or her own calves with the guidance of the county agent or club leader, or the calves may be selected and purchased in a group and distributed among the members by some equitable means.

When possible each club member should have two calves because two fed together will do better than one. Then top, he will have a better chance of winning.

The price of calves should be closely in line with commercial prices of stockers and feeders altho in topping a man's calf crop it is only reasonable that some slight premium be paid. It is felt, however, that most cattle breeders in the State will be interested in the promotion of Baby Beef Club Work to the extent of selling calves to 4-H Club Members at reasonable prices.

THE KIND OF CALF TO FEED

It takes a good calf to make a good baby beef. Proper feed and feeding will do a lot for a calf but no amount of flesh will make a top finished animal out of a naturally poor type individual.

Form: In form the calf should be thick, deep, blocky, compact and close to the ground. He should have a straight top and underline, carry his width and depth evenly from end to end, be smooth in the shoulders, wide in the spring of rib, thick in the loin, smooth over the hips, level in the rump with a smooth tail setting. The hind quarters should be well developed, both in width and depth. The legs should be short and straight.

Head and Neck: The head should be wide between the eyes and short from eyes to muzzle. The muzzle should be broad and the entire head have a neat appearance. The neck should be short and thick and neatly and smoothly joined to head and shoulders.

Constitution: A good constitution is an indication of good feeding qualities. The chest should be deep and wide, the heart girth well developed and the fore flank deep and full.

Quality: The calf should show good quality which is indicated by a clean cut appearance of the head, medium sized bone, and a loose pliable hide.

Breeding: In order to get the desirable form, quality and feeding ability to make a good baby beef it is necessary to obtain a calf with a high percentage of beef breeding. He may be purebred, high grade or a cross of two of the beef breeds. Avoid animals with any appreciable amount of dairy breeding. Occasionally, one may look good as a calf but in most cases the older he gets the worse he will look.

FEEDS

Corn is the best fattening feed we have and generally makes up a liberal part of any fattening ration. In commercial feeding it is generally fed in broken ears or shelled with hogs following the cattle. In feeding calves it is probably best to feed it shelled or coarsely cracked.

Barley is about equal to corn in fattening ability and many feeders prefer it to corn, especially during the latter part of the feeding period because it is thought to produce a smoother finish.

Wheat is about equal to corn or barley in feeding value and if cheaper may be used to replace part of either of these grains during the early part of the feeding period. Wheat is not as palatable as these other grains and should not be fed in large quantities or over a long period of time.

Oats are too high in fiber and protein to make up any large part of the fattening ration. However, where they are home grown they may be fed to advantage, especially at the beginning of the feeding period.

Wheat Bran is high in protein and minerals, is slightly laxative and may be used to replace part of the oats if the price is not too high.

Cottonseed Meal is the leading protein feed available in the South. It is sometimes used as the sole concentrate in feeding cattle for a 90 to 100 day feeding period but more often is fed as a protein supplement to balance carbonaceous feeds such as corn or barley.

Linseed Oil Meal is quite similar to cottonseed meal in feeding value altho it contains more minerals and is more laxative. It is often used by show men to put a better bloom on cattle. In the South, however, it is usually too high in price to be practical. If it is not unreasonable in price use the "pea size" cake to replace part or all of the cottonseed meal in the ration, especially toward the end of the feeding period.

Other Protein Supplements include soybean meal and peanut meal, either of which may be used in place of cottonseed meal if the price is reasonable.

Milk is the best feed to be had for young calves. Of course it will not be practical for senior calves, but juniors should be kept on their mother's milk until they are seven or eight months old and fed a regular grain ration in addition.

Black Strap Molasses is sometimes fed as an appetizer by mixing a small amount with enough water to moisten the feed. Only such feed as is to be fed at once should be prepared in this way.

ROUGHAGES

Silage is a valuable feed for either wintering or fattening cattle. Experimental results show a saving of \$1.00 or more per hundred pounds gain when silage is fed in limited amounts to fattening cattle.

Legume Hays such as alfalfa, clover, soybean, lespedeza, or cow pea are valuable in cattle feeding. They not only furnish the dry roughage which is needed but effect a saving in protein supplement. They also contain more minerals and vitamins than most other feeds.

Mixed Hay is the term usually applied to a timothy and clover mixture altho it may indicate any grass and legume combination. Such a hay may be used as the dry roughage in fattening calves if a straight legume is not available.

Corn stover is that part of the corn plant remaining after the ears are removed. It is sometimes used as the sole roughage in the commercial feeding of mature cattle and may be fed to calves in limited amounts with a good legume hay.

FEEDING

Calves should be gotten onto feed as early as possible in order that they may be fat for the fall fairs and shows. Calves finish much slower than older animals because they are growing as well as fattening. It generally takes from 6 to 8 months of intense feeding to put a calf in good condition and more time will do no harm. Do not be afraid of getting a calf too fat. Experience in 4-H Club baby beef feeding in many states has proven that for every calf that is fat enough there are a hundred or more that lack finish and the overfat animal is very rare indeed.

Only feeds that are generally produced in North Carolina are given in the following rations because feeding should be kept on as practical a basis as possible.

SUGGESTED RATIONS

(1st - Four to Six Weeks)

Corn (shelled or coarsely cracked) or Ground Barley	- 4 lbs.
Oats (whole or rolled)	2 lbs.
Cottonseed meal or other protein concentrate	1 lb.
Legume hay*	at will.

(2nd - Four to Six Weeks)

Corn (shelled or coarsely cracked) or Ground Barley	- 5 lbs.
Oats (whole or rolled)	2 lbs.
Cottonseed meal or other protein concentrate	1 lb.
Legume hay*	at will

(3rd - Four to Six Weeks)

Corn (shelled or coarsely cracked) or Ground Barley	- 6 lbs.
Oats (whole or rolled)	2 lbs.
Cottonseed meal or other protein concentrate	1 lb.
Legume hay*	at will

Summer Feeding

Corn (shelled or coarsely cracked) or Ground Barley	- 7 lbs.
Oats (whole or rolled)	2 lbs.
Cottonseed meal or other protein concentrate	1 lb.
Grass	at will

Note: Silage if available may be added to the above rations in amounts from 8 to 15 pounds, depending upon the size of the calf.

*An unlimited amount of legume hay may cause certain individuals to become too loose in the bowels. When this happens the legume hay should be limited and supplemented with a non leguminous roughage.

GENERAL FEEDING DIRECTIONS

In getting calves started on feed it is best to feed only a small amount at first gradually increasing it until they are on full feed or in other words, getting all they will eat. For calves that are to be fed six months or longer six or eight weeks time should be taken to get them on full feed.

The grain mixture should be kept coarse and flaky at all times. If finely ground and floury, digestive troubles often result. Some good feeders chop up some good quality hay and mix it with the grain.

Regularity in the time of feeding is very important. Set times for feeding and let nothing prevent feeding at those times each day.

How Often to Feed - During the first part of the feeding period feed twice each day, for example: 7:00 A.M. and 6:00 P.M. By the middle of the feeding period this may well be increased to three times a day, 7:00 A.M., 12:30 P.M. and 6:00 P.M.

Avoid Abrupt Changes in the ration. This applies both to kinds and amounts of feed.

The amount of feed given at each feeding after calves are on full feed should be such as will be cleaned up within a reasonable length of time. If any feed is left over from one feeding period to the next, clean it out and give it to the breeding cattle or hogs. Keep the appetites keen. If calves go off feed for any reason cut the amount down, then as their appetites come back, gradually increase it again.

Water: Clean, fresh water should be available for calves at all times.

Salt should be kept in a box where calves can help themselves at will. Some feeders also mix a small amount with the feed.

CARE AND MANAGEMENT

Feed Boxes should be reasonably close to the ground so that calves will not have to strain to reach them. They should be kept clean at all times.

Shelter sufficient to keep calves comfortable and free from drafts should be provided.

A dry, clean bed is necessary for calves to do well. It is usually necessary to add fresh bedding each day.

Castrate bull calves at an early age. The longer this is put off the harder it is on both the calf and the person performing the operation. Make two incisions, one for each testicle, on the front part of the scrotum, seeing that they run low enough for the wound to drain.

Dehorning: Calves intended for slaughter should be dehorned. This is best done when they are a few days old by the use of caustic or a calf dehorner. If this is not done when the calf is young a saw or regular dehorning instrument is necessary.

Halter Break calves early. It is usually best to keep calves tied for a few days before attempting to lead them. A halter made of one-half inch rope is best for breaking calves to lead. After they are halter broken let them run loose. If kept in a stall, turn them out in a small lot each day for grazing and exercise except in very bad weather.

Groom calves frequently. A comb may be used for loosening dirt but do most of the grooming with a stiff brush.

Wash calves each week for several weeks before show time. Scrub thoroughly with soap (tar soap is best) and water, being sure to rinse all the soap out of the coat. After rinsing and scraping surplus water from the coat dampen all over with a weak coal tar dip solution and curl. Get some one with experience to show you how to curl and dress the coat of hair.

In warm weather calves will do best in a darkened stall away from flies in the day time, allowing them to run out at night.

Train calves to stand properly with their feet squarely under them. This should be done as soon as possible after they are halter broken.

Be firm yet quiet and gentle as possible with calves. They will show to better advantage if well trained but not spoiled.

In summer when flies are bad calves may be kept in a darkened stall during the day and out at night. This may not be practical in commercial feeding but where calves are to be shown it tends to promote a better coat of hair.

Records should be kept of the initial weights of calves and the cost or value per pound or per head. Also keep a complete record of weights and values of all feeds fed and if scales are available record weights of calves every 28 days.

FEEDING AND FITTING BEEF CATTLE FOR SHOW OR SALE

By L. I. Case, Beef Cattle Specialist
North Carolina State College, Raleigh, N. C.

The exhibition of cattle at fairs and shows is of value to the breeder as a means of advertising and for comparing his animals with those of other breeders. However, if these advantages are to be gained the cattle must be presented in good condition and no details overlooked in seeing that they make the best possible appearance.

SELECTING THE SHOW HERD

In feeding and fitting beef animals for the show or sale ring, the first, and a very important thing, is the selection of the animals to be fitted. There is no use wasting feed and time on off-type animals that will never make a favorable appearance no matter how fat and well trained they may become.

The ideal beef animal is one that is thick, blocky and reasonably close to the ground with sufficient scale for age. He should be straight in his top, bottom and side lines, carry an even width from end to end, and be reasonably close in the coupling.

The head should be nicely proportioned, broad between the eyes and short from eyes to muzzle with sufficient width of muzzle to indicate good feeding qualities. The head should be typical of the breed represented and show marked sex characteristics. The neck should be short and thick, as clean as possible in the throat and neatly joined to head and shoulders.

The shoulders should be in proportion to the rest of the body, neither too wide nor too narrow, and smoothly blended into the body. The chest should be wide and full and the heart girth broad and deep, giving sufficient room for the vital organs, thus indicating a good constitution. The crops should be full, the ribs widely sprung, the loin thick and wide and hips not too prominent but neatly laid in. The rump should carry out straight, wide and full and the tail head smooth and level with the back line. The thighs or rounds should be wide, deep and full, and the twist deep. The legs should be straight and set squarely at the four corners of the body, and the flanks, both fore and rear, should be deep and full.

The animal should show evidence of good quality as indicated by a pliable hide, a soft silky coat of hair, neatness in the bone and smoothness in the flesh covering. In temperament the animal should be reasonably quiet and docile, yet with enough life and style to give him an attractive carriage.

The prospective show animal should be smoothly and thickly muscled, especially in the regions of the most valuable cuts, loin, ribs, and quarters. He should also be carrying sufficient fat to make it possible to put him in show condition within the time available.

Uniformity of animals to be shown is of considerable importance. In so far as possible the various individuals in the show herd should be of uniform type, conformation, and color. This point is particularly valuable in the herd and group classes.

FEEDING

No matter how good a beef animal is as an individual he will not show to advantage unless he is in top condition. It is, therefore, of utmost importance that cattle be started early enough to assure a good finish at fair or sale time.

Feeding purebred cattle for show or sale purposes is similar to feeding for market except that a higher degree of finish is necessary. Furthermore, economy is relatively of less importance than is a smooth even covering of flesh.

Animals intended for show should be started on a small amount of feed which should be gradually increased until they are getting all they will clean up.

Feed three times a day rather than twice as this will induce greater total consumption.

After cattle are on full feed give what they will clean up within an hour at each feeding. Any left over feed should be removed from the box. Should an animal go off feed for any reason, cut his feed down considerably, then, after he is again normal, gradually increase to the full amount.

Regularity of feeding is probably of as much importance as the ration itself. If six, twelve and six are selected as feeding hours, feed on the dot each time.

Changes in the kind of feed should be made gradually. If for instance, a mixture of corn, oats, bran and cotton seed meal are being fed and it is decided to use linseed oil meal to replace part of the cotton seed meal cut down the one and add the other a little at a time rather than abruptly.

Variety in the ration is desirable. Three or four kinds of feed are better than one or two. The addition of some cut up roasting ears or some sweeting by means of black strap molasses, will usually cause animals to eat more.

The texture of the ration should be kept coarse. Coarsely cracked corn is preferable to corn that is finely ground; rolled, coarsely ground or even whole oats are better than finely ground; coarse, flaky bran is better than fine, or bran containing middlings; pea-size oil meal is better than the fine meal. Some good herdsmen add cut hay or the cut stalks of green corn to the feed to coarsen it.

SUGGESTED RATIONS FOR FITTING SHOW CATTLE

- | | | | |
|------|------------------------------------|---------|--|
| I. | Corn (coarsely cracked) Or Shelled | 4 parts | } Moisten each feed with one pint of molasses diluted with equal amount of water |
| | Oats (rolled or whole) | 2 parts | |
| | Cotton seed or Linseed meal | 1 part | |
| | Wheat bran | 1 part | |
| | Legume hay | | Unlimited |
| II | Corn (coarsely cracked) Or shelled | 4 parts | |
| | Oats (rolled or whole) | 2 parts | |
| | Bran | 1 part | |
| | Molasses feed | 2 parts | |
| | Legume hay | | Unlimited |
| III. | Corn (coarsely cracked) or shelled | 4 parts | |
| | Oats (rolled or whole) | 2 parts | |
| | Cotton seed or Linseed meal | 1 part | |
| | Molasses feed | 2 parts | |
| | Legume hay | | Unlimited |

Barley is preferred to corn by many good feeders as they claim it tends to put on a smoother finish. Some replace part of the corn with it the latter part of the feeding period.

Linseed oil meal is somewhat superior to cotton seed meal in the fitting ration due to its slightly laxative effect. This tends to keep the animal in general good health as evidenced by a glossy coat of hair and thrifty appearance. Due to the lower cost of cotton-seed meal it may be well to feed it during the early part of the feeding period, replacing it wholly or in part during the last several weeks.

GENERAL CARE AND MANAGEMENT

After warm weather sets in cattle being fitted for show should be kept in a darkened barn during the day time. This prevents the hair from being sun burned and lessens the annoyance from flies and other insect pests. Openings in the barn are often covered with a single thickness of burlap which helps to keep out the light, yet allows ventilation. Where this is impractical cattle may be covered with blankets of some light material to protect them from flies.

Sometimes certain individuals have a sluggish appetite for grain when they have access to grass. In this case it is best to keep them off grass entirely and in a dry lot at night.

A certain amount of exercise is necessary for the well being of the cattle. Young animals usually take enough of their own accord but in the case of older animals it is sometimes necessary to lead them from one-half mile to a mile each day.

A liberal supply of bedding should be supplied both winter and summer. This makes the animals more comfortable, keeps them clean, saves feed and preserves the manure.

Fresh water and salt should be accessible at all times.

HALTER . BREAKING AND TRAINING.

Too much cannot be said about the importance of having an animal properly halter broken and trained to lead and stand to show to the best advantage. It is difficult for the judge to examine animals that are nervous and restless in which case he often gives them small consideration.

A rope halter so constructed that it draws under the chin is best for breaking an animal. This same kind of halter will do for showing too but most showmen use an adjustable leather halter for this purpose.

Do not put off halter breaking. A method sometimes used is to tie the animal up several hours each day for a few days, thus getting him used to the halter before an attempt is made to lead him. After he is taught to lead teach him to stand squarely on his feet, with head in a natural position and back straight. Lead and pose the show prospect often until it becomes second nature for him to pose properly.

WASHING AND CURLING.

Show cattle should be kept clean by washing and brushing. Moreover, fairly frequent washings with cold water during warm weather tends to promote a good growth of hair. At least one washing a week should be given during the month before the first show. The animal should be securely tied, then lathered all over, being careful not to get soap in his eyes. Tar soap is best for this purpose but any soap will do. After a thorough scrubbing with a stiff brush rinse the soap all out and scrape and wipe as dry as possible. Next, wet with a weak solution of coal-tar dip. Scrape the surplus water off and curl. Curling consists of dressing the hair in such a way that it helps to cover defects and gives the body of the animal a thicker, blockier appearance.

Shorthorns, nearly always, and Herefords and Angus sometimes are curled in the following manner. Wet the coat thoroughly with a weak coal-tar solution applied with a brush. Scrape out surplus water, brush down smooth on both sides and part the hair evenly along the back from tail head to poll. Now starting just below the pin bones mark parallel lines about one inch apart all along both sides of the animal from back to front. These lines are made with a Scotch Comb or an ordinary flat straight curry comb with every other row of teeth pounded down flat. Next, use a stiff dry brush and brush up lightly against the lay of the hair. Follow

this light brushing with a thorough combing also working up, and then a harder brushing in the same direction. Now comb the hair flat on each side from the back bone out to the edge of flat part of the back. A few finishing touches such as parting the hair on the forehead and fluffing the brush of the tail makes the animal ready for the show ring.

Herefords are usually curled by the use of the round curry comb, holding it at an angle in relation to the body of the animal and starting at the top and zig zagging it downward. This process is repeated every three or three and one-half inches until the side is completed, covering neck, body and thighs. Now follow the same manner of brushing and combing and otherwise completing the job as described in curling Shorthorns.

Aberdeen Angus, as already stated, are sometimes dressed as are Shorthorns but more often they are shown smooth with the exception of the thighs which are curled and brushed up to give the appearance of greater fullness.

CLIPPING HEADS AND TAILS

The heads of Aberdeen Angus and Red Polls are usually clipped in front of a line drawn around the neck about three inches back of ears. The long hairs on the inside of the ears, around the muzzle and the eye lashes should not be clipped.

The tails of all breeds should be clipped from a little above the switch to the tail head, which should be gradually tapered off to make a smooth blending with the rump. All clipping should be done two or three weeks before the show season opens.

THE HORNS

All horned breeds make a better appearance with well shaped horns. They should generally curve downward, inward and forward. It is often necessary to train the horns downward by the use of weights. This is more readily done with young animals, using care that the weights are not too heavy or left on too long at a time for otherwise the horns are apt to be broken or bent too severely close to the head.

The appearance of horns can be improved by clipping the tips, rasping, and dressing down. The amount of work will depend upon the age of the animal and the size and condition of the horns. Calf horns usually require but little work compared with older animals. As a rule, the steps in preparing horns are as follows: rasping with a coarse file, scraping with a steel scraper or glass, sand papering, rubbing with fine emery cloth or a flannel cloth and emery dust. Finally, rub with a woolen cloth moistened with sweet oil or metal polish. Some judgment must be exercised with the rasping as the general shape of the horn can be changed somewhat by this operation. For example, if the horn does not curve downward

enough rasp the heaviest on the underside center and on the upper tip. Also take care that the horn is not rasped or scraped too thin. The younger the animal the less severe should be the rasping and visa versa.

THE FEET

Badly shaped feet cause an undue strain on the bones and ligaments and often result in weakened pasterns. This condition should be corrected by trimming. Stocks are best for this work but it can be done by casting the animal. The excess growth on the bottom of the hoof should be pared down with a sharp chisel and any extra growth on the toes can be taken off with cutting pincers. It is a mistake to cut the toes back without leveling up the bottom of the hoofs.

SHOW RING TECHNIQUE

Lead and show from the animal's left. If possible, select ground for showing that is slightly higher under the fore feet. Watch your animal and have him in the best possible position when the judge is examining him. A light cane or stick is useful for placing the feet and holding up a weak back. Work easily and gently as nervous, quick movements will tend to excite your animal. Lastly, be a good loser or a good winner, whichever the case may be.

STATISTICAL REPORT

Number of days in field	176
Number of days in office	132
Number of days on leave	5
Number of auto miles traveled	19411
Number of rail miles traveled	613
Number of air miles traveled	0
Number Method Demonstrations	8
Attendance	48
Number of Meetings Addressed	9
Attendance	324
Number of Farms Visited	164
Number of Office Consultations	48
Number of Letters Written	529
Number of Circular Letters Prepared	10
Number of Circular Letters Sent	1162
Number of Bulletins Sent Out	72
Number of Articles Prepared	16
Number of Beef Bulls Placed	6
Number of Purebred Females Placed	20
Number of High Grade Females Placed	75

Gowley - Cows - Cattle diseases.

avg. 6 yrs.	Total Dig Nutrients at 1430	10 yrs. avg.	cost 10 yrs.
1 - 1858	58.52 27.4	28.9 70 + 0.003	\$ 585.2
2 - 2006	58.52	20.9 " " "	
3 - 1258	0		
4 - 1898	13.88	26.3 " " "	138.8
5 - 1916	50.41		
6 - 1670	42.42		
7 - 1028	0		
8 - 1455	34.37		

appl. cut 1/2 - at end of 5 yrs.

Suggested Pasture Exps.

Lim on all - pH. 6.

1.	2.	3.	4.
1. Compl. Fert	Compl. Fert.	Phosphorus & Potash	Phos & Potash
2 - "		"	
3 - "		"	
4 - "			
5 - Phosphate			

Name of Project - Environmental factors affecting the establishing of permanent pastures in the Coastal Plain area.

Location - Wilsns Mills, N. C.

A. Species used

1.	20 lbs.	Dallis grass	+ 10 lbs.	Kobe lespedeza
2.	20 "	"	+ 2 "	white clover
3.	20 "	"	+ 2 "	wild white clover
4.	20 "	"	+ 10 "	low hop clover
5.	20 "	"	"	"
6.	20 "	Carpet	+ 10 "	Kobe lespedeza
7.	20 "	"	+ 2 "	white clover
8.	20 "	"	+ 2 "	wild white clover
9.	20 "	"	+ 10 "	low hop clover
10.	20 "	"	"	"
11.	30 "	Bermuda	+ 10 "	Kobe lespedeza
12.	30 "	"	+ 2 "	white clover
13.	30 "	"	+ 2 "	wild white clover
14.	30 "	"	+ 10 "	low hop clover
15.	30 "	"	"	"
16.	20 "	Orchard	+ 10 "	Kobe lespedeza
17.	20 "	"	+ 2 "	white clover
18.	20 "	"	+ 2 "	wild white clover
19.	20 "	"	+ 10 "	low hop clover
20.	20 "	"	"	"
21.	7 "	Dallis	(+ 5 "	Kobe lespedeza
	10 "	Carpet	(+ 1 "	white clover
	10 "	Bermuda	(+ 5 "	low hop clover
22.	20 "	Kentucky blue grass	+ legumes same as 21	
23.	20 "	Redtop grass	+ legumes same as 21	
24.	7 "	Bluegrass) + legumes same as 21	
	7 "	Redtop grass) + legumes same as 21	
	7 "	Orchard grass)	

B. Fertilizer applications

1. No treatment
2. 800 lbs. superphosphate every 4 years (equal to 400 lbs. 0-8-0 annually). Apply in 1937.
3. 600 lbs. superphosphate every 4 years. 200 " muriate of potash every 4 years (equal to 400 lbs. 0-8-6 annually). Apply in 1937.
4. 800 lbs. superphosphate every 4 years. 200 " muriate of potash every 4 years. 100 " NaNO₃ annually (equal to 400 lbs. 4-8-6 annually). Apply in 1937.
5. Same as #3 plus dolomitic limestone. Apply in 1937.
6. " " #1 " " " " " " " " " " " "
- Sufficient limestone to be added to bring pH approximately to 6.5.

Lbs. Dry Matter Per Acre 1938-39

Fertilizer Treatments

Seeding mixtures	A	B	C	D	E	F	Ave.
1	2039	2495	2855	2956	2385	2952	2614
2	1853	1432	1361	2706	1593	2699	1872
3	1159	1629	1718	2448	1614	2665	1872
4	1368	1483	1523	2600	1386	2458	1803
5	1246	1390	1560	2477	1186	2172	1672
6	1425	1892	1953	2368	1690	2194	1920
7	566	698	823	1358	734	1376	926
8	584	652	655	1385	630	1300	868
9	650	898	808	1515	1077	1675	1104
10	637	667	639	1428	636	1431	906
11	1952	2135	1974	2279	2236	2192	2128
12	874	846	878	2155	1224	2181	1360
13	804	1239	917	1944	1284	1991	1363
14	931	838	828	1925	908	1969	1233
15	1795	1851	1910	2085	2076	1665	1897
16	881	909	839	1729	966	1796	1187
17	849	992	896	1825	1035	1793	1232
18	917	802	864	1781	930	1839	1189
19	1925	1993	1960	2673	1926	2580	2176
20	1943	1854	1825	1998	1696	1706	1837
21	1433	1615	1650	1868	1586	1915	1678
22	1843	1724	1771	1978	1698	1997	1835
Ave.	1235	1365	1373	2071	1386	2025	1576

Vegetative-Reproductive Growth Relationships of Dallis Grass

Seeding mixtures	Fertilizer Treatment												Ave. Total Percent	
	A		B		C		D		E		F			
	Total	Percent	Total	percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent		
1	1994		2514		2786		2510		2420		2479		2447	
1A	583	23	700	22	724	21	362	26	569	19	913	27	725	22
2	617		765		674		2106		1010		2024		1199	
2A	919	60	863	54	909	57	1160	36	890	47	1084	35	974	45
3	555		840		915		1636		1054		1962		1164	
3A	750	53	939	53	1095	52	1044	39	885	46	1092	36	953	45
4	696		855		963		1982		842		2025		1211	
4A	809	54	843	50	863	51	942	32	766	48	957	32	868	42
5	575		691		821		1582		385		1666		1003	
5A	768	57	819	54	837	50	979	38	731	52	849	34	831	45
Ave. 1-5	837		1133		1209		1663		1202		2035		1405	
Ave. 1A-5A	766	46	837	42	974	42	997	34	768	39	979	32	870	38

Species	Treatment	Percentage P ₂ O ₅			Percentage CaO			Percentage Protein		
		5/23/38	7/28/38	9/26/38	5/23/38	7/28/38	9/26/38	5/23/38	7/28/38	9/26/38
1	A	.99	1.02	.84	1.23	.88	.80	12.28	13.31	14.15
1	E	.98	.95	.89	1.37	.67	.84	13.09	12.96	8.87
1	F	.90	.66	.84	1.33	.47	.73	14.35	8.64	13.27
5	A	.93	.81	.78	1.16	.49	.46	10.34	9.02	9.69
5	E	1.05	.88	.70	1.44	.60	.45	11.34	10.70	9.78
5	F	.99	.93	.76	1.02	.55	.53	15.15	8.92	12.75
6	A	1.18	1.05	.79	1.22	1.15	1.07	11.79	16.79	13.64
6	E	.93	1.10	.81	1.50	1.11	1.02	11.32	16.24	15.00
6	F	1.10	1.05	.84	1.27	.99	.75	15.55	14.23	14.22
10	A	1.18	.93	.72	1.02	.65	.48	11.50	11.10	9.04
10	E	1.04	.99	.68	.94	.73	.50	11.36	12.56	14.14
10	F	1.18	.96	.83	1.11	.74	.67	13.64	11.22	12.20
11	A	.91	1.08	.83	.84	.89	.91	10.70	14.84	14.60
11	E	.92	1.13	.94	.80	1.20	1.18	11.34	16.84	11.57
11	F	1.01	1.11	.93	.64	.78	.82	11.86	11.98	12.94
14	A	.93	.96	.92	.62	.62	.66	8.43	11.33	13.15
14	E	.95	1.02	.99	.58	.64	.56	8.50	10.77	10.64
14	F	.89	1.05	.91	.62	.74	.68	11.38	10.72	12.63
19	A	.96	.87	.69	1.01	.92	.66	11.41	13.23	12.33
19	E	.94	.97	.88	.93	1.03	.98	10.41	15.88	15.32
19	F	1.00	.86	.86	.82	.70	.74	13.16	10.90	14.03

Treatment	Percentage P ₂ O ₅			
	5/23/38	7/28/38	9/26/38	Ave.
A	1.01	.96	.80	.92
E	.97	1.01	.84	.94
F	1.01	.95	.85	.94
Ave.	1.00	.97	.83	.93

Species	Percentage P ₂ O ₅			
	5/23/38	7/28/38	9/26/38	Ave.
Grass + lespedeza	.99	1.02	.86	.96
Grass	1.02	.95	.81	.93

Treatment	Percentage CaO			
	5/23/38	7/28/38	9/26/38	Ave.
A	1.01	.80	.72	.84
E	1.08	.88	.79	.92
F	.97	.71	.70	.79
Ave.	1.02	.80	.74	.85

Species	Percentage CaO			
	5/23/38	7/28/38	9/26/38	Ave.
Grass + lespedeza	1.13	.93	.90	.99
Grass	.95	.64	.55	.71

Treatment	Percentage Protein			
	5/23/38	7/28/38	9/26/38	Ave.
A	10.92	12.80	12.37	12.03
E	11.05	13.71	12.13	12.31
F	13.58	10.94	13.15	12.56
Ave.	11.85	12.48	12.56	12.30

Species	Percentage Protein			
	5/23/38	7/28/38	9/26/38	Ave.
Grass + lespedeza	12.48	13.98	13.12	13.19
Grass	11.30	10.70	11.56	11.19

ANIMAL INDUSTRY—SUMMARY BLANKS

Pasture Fertilization 1934.
E.E. Bell Farm, Polkville, N.C.

Nos. in red indicate
number head of cattle
on plot for period.

May 9
June 6
July 4
Aug 1
Aug 29
Sep 26
Oct 24



Late spring grass winter killed
Good rains
but pasture still backward

Dry No Rain
for 30 Days

Some rain
Pasture holding
own

Rain - pasture
improving

Pasture greatly
improved. B grazed
closer than A.

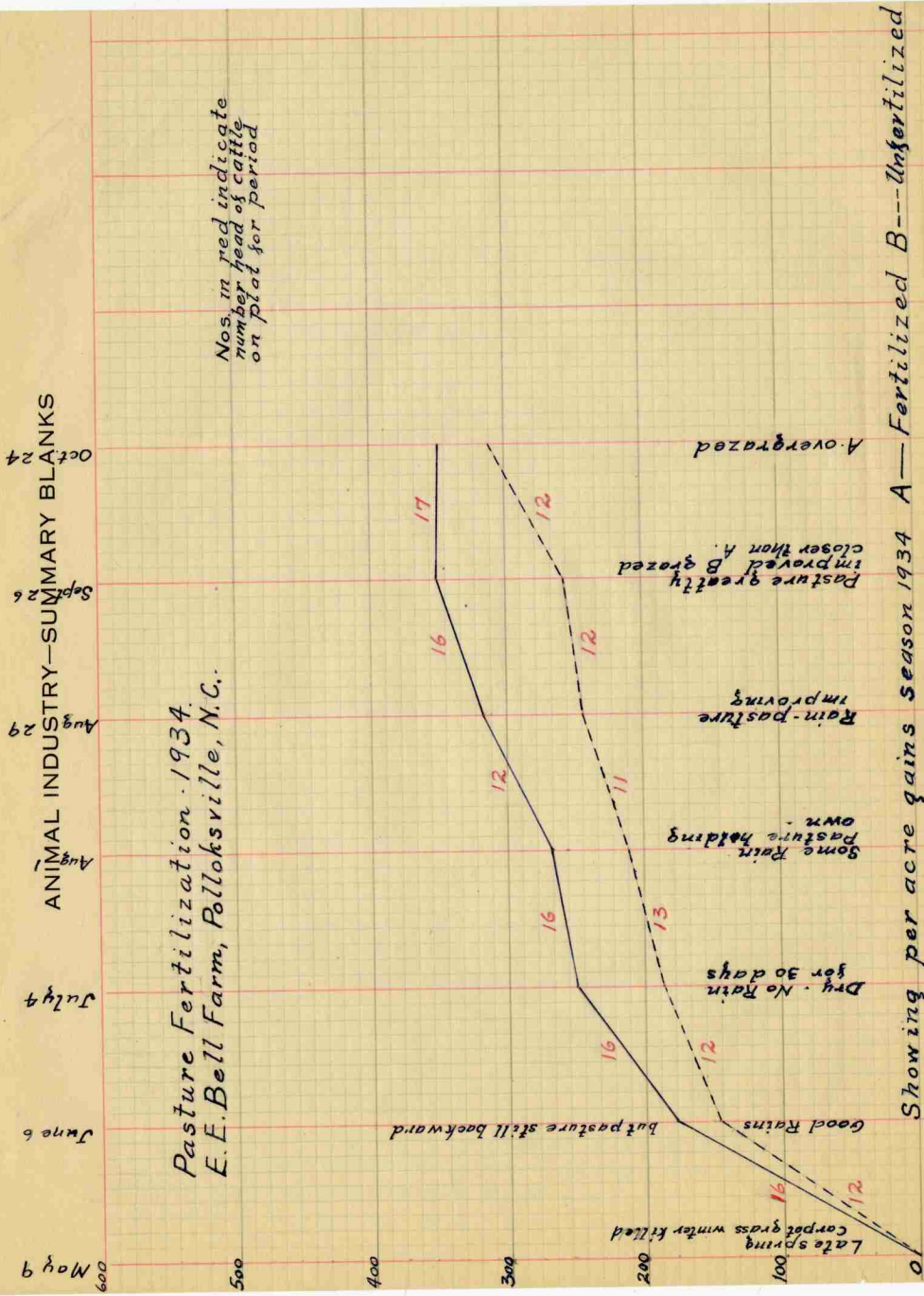
A overgrazed

Showing per acre gains season 1934 A Fertilized B Unfertilized

ANIMAL INDUSTRY—SUMMARY BLANKS

Pasture Fertilization, 1934.
E. E. Bell Farm, Pollockville, N.C.

Nos. in red indicate
number head of cattle
on plot for period



Showing per acre gains season 1934 A—Fertilized B---Unfertilized

composite 1933 & 1934

ANIMAL INDUSTRY—SUMMARY BLANKS

