A study of Pastures and Their Utilization by Sheep
(Piedmont Station)

Tests conducted at the Piedmont Station from 1934 through 1942 showed that Abruzzi Rye, Italian Rye Grass and barley were apparently about equal as winter pastures for sheep. However, the lespedeza that followed in the rotation was considerably better in the rye and barley lots. Evidently the rye grass formed too much sod to be a good nurse crop for lespedeza. Rye and barley furnished earlier grazing in the fall but rye grass provided later grazing in the spring.

The winter pastures were ready to graze around the first of November and were grazed when forage was available until about the first of May. An average of 99 days' grazing was furnished. Four acres provided 1037 ewe and 581 lamb days' grazing annually. The annual gain of the ewes (10 ewes and their lambs) was 228 lbs. and their lambs 378 lbs. The average daily gain of the lambs was .65 lb. Not only were the gains more rapid than in the check group which was fed harvested feeds in the dry lot but the gains were much cheaper. During the 99 day grazing periods each acre of the pasture saved 10 lbs. of legume hay and 4 lbs. of concentrate daily. Total feed saving for winter of $23.00 per acre. Value of lamb gains $14.20.

Four acres of improved permanent pasture (blue grass, white clover, orchard and dallas grass principally) provided grazing for 10 ewes and their lambs from about the first of April to middle of November, an average of 222 days. An average of 48 lbs. gain on the ewes and 120 lbs. gain on the lambs was obtained per acre. Value of lamb gains $18.00.

Pasture Studies with Beef Steers at the Central Station

Twenty-one acres of crimson clover on very poor land provided continuous grazing for 21 yearlings from February 22 to May 17. During this 84 day period the average gain per yearling was 154 lbs. The feed saved per acre daily was 10 lbs. of lespedeza hay and 2 lbs. of barley. The steer gains were worth at least $15.00. In addition some grazing was provided at irregular periods before February 22.

Lespedeza pasture on similar land provided grazing from about June 1 to November 1. A little over 1 acre was required per head and the gains were approximately 200 lbs. each.

J E F -
meet JHH 9:00 am

A Balanced Forage Program for Southern Coastal Plain Counties

I. Permanent pasture plants

A. Growth habits

1. Dallis grass - Produces grazing from May 15 to frost. A semi-bunch grass that will tolerate medium but not close grazing (slide showing effects of severe defoliation). Legumes grow well in association with it.
2. Bermuda grass - Growth curve similar to Dallis grass. A sod forming grass that will tolerate close grazing. Legumes tend to be crowded out of Bermuda sod. Coastal Bermuda is a taller growing, more productive variety that produces very few seed.
3. Orchard grass - Makes growth in cool temperature - March 1 - May 15 and September 15 - November 15. A bunch grass that will not tolerate close grazing. Legumes grow well in association with it.
4. White clover - This perennial grows from March 1 - June 1 and from September 15 - November 15. Will tolerate medium but not close grazing. Ladino is a larger variety with larger leaves and leaf stalks and fewer blossoms. (Slide showing difference between the two varieties).
5. Lespedeza - Growth curve from June 1 - October 1. Kobe more productive than common but cannot be grazed as closely. Lespedeza cannot compete as successfully with grasses as can white clover.
6. Low hop clover - A reseeding winter annual that makes most of growth between March 1 and May 15. This legume must not be grazed too closely for seed crop to form. Sod should be grazed closely in fall to reduce competition for clover seedlings. (Slide showing effect of fall grazing on volunteering habits.)
7. Alfalfa - Makes growth from April 1 to October 15. An upright, perennial legume used primarily for hay. Should not be cut after September 15 to allow storage of root reserves.

B. Growth requirements

	Soil fertility	Soil moisture
1.	Dallis grass - medium to good	Moist soils
2.	Bermuda grass - poor to medium	Dry, well drained
3.	Orchard grass - good	Moist soils
4.	White clover - medium to good	Moist soils
5.	Lespedeza - poor to medium	Any moisture condition except sand ridge
6.	Low hop clover - medium	Moist soils
7.	Alfalfa - medium to good	Well drained

C. Seeding combinations

1.	10 lbs. Dallis grass 15 lbs. Kobe lespedeza	For the average sandy soil
2.	10 lbs. Dallis grass 5 lbs. Low hop clover	For the average sandy soil
3.	8 lbs. Dallis grass 5 lbs. Orchard grass 15 lbs. Kobe lespedeza 1 lb. White clover	For fertile, moist soil
4.	Bermuda rootstocks 15 lbs. Kobe lespedeza	Sandy, well drained soils
5.	25 lbs. Kansas or Oklahoma common alfalfa	For well drained soils

II. Seeding pastures

A. Preparing for pasture - Is the field ready for seeding?

1. Plan pastures far enough ahead to allow time for getting the land in condition
2. Unless land will produce better than 15 bus. corn per acre, it should be built up with fertilizer and legumes before seeding grass-legume mixture
3. Lespedeza stubble, with seed crop, disced down is fine place for fall seeded pasture

B. Seedbed preparation - most pasture grasses and legumes have small seed - therefore -

1. Should be shallow (picture)
2. Should be firm
3. Should be thorough
4. Stubble or cover crop should be chopped up but left on or near the surface to reduce evaporation and prevent erosion. (Picture) (Data). These can best be accomplished by discing rather than plowing.

C. Methods of seeding - should provide for covering the seed <u>but shallowly</u>

1. Cultipacker seeder (picture) very good!
2. Mix with fertilizer materials and cross drill. Good! (Picture)
3. Grain drill small seed attachment - cover with cultipacker or harrow. (Picture)
4. Hand seeder - cover with cultipacker, harrow, or brush drag

D. Inoculation - one of the trickiest steps

1. Use plenty of culture
2. Moisten with water - syrup mixture and dry with C. S. M. (Picture)
3. Cover seed immediately - cloudy day preferred
4. When in doubt, re-inoculate by broadcasting culture ahead of shower (Picture)

E. Time of seeding

1. Fall seeding best for all winter-hardy plants
   (a). Advantages - (1) cooler weather for
   (b). Good root development establishement (2) less weed trouble
2. Seed early - September 1 seeding may make difference of several months' grazing over October 15 (Picture)

III. Fertilization

A. Limestone

1. Need on legumes (Pictures)
2. Rates (Data) (Pictures)
3. Methods of applying
   (a). Truck spreader (Picture)
   (b). Whirlwind
4. Apply ahead of seeding and work into soil (Pictures)

B. Phosphates

1. Need - effect on legumes (Pictures) (Data)
2. Effect on establishment of seedings
3. Rates (data) heavy rates at planting if worked in (pictures) put in 5 or more years' supply
4. Top dressing - apply small amounts frequently if supply was not put in at planting

C. Potash

1. Need - effect on legumes (Pictures) (Data)
2. Use largely as top dressing
3. Rates (Pictures) (Data)

D. Minor elements

1. Boron on alfalfa (Pictures)
   (a). Rates
2. Manganese on overlimed soils (Picture)

E. Manure

1. Aids inoculation
2. Prevents winter heaving
3. Encourages clovers as well as grasses

F. Nitrogen - not desirable on grass-legume mixtures

1. Encourages weeds in new seedings (Pictures)
2. Causes crowding out of legumes in established sods (Pictures) (Data)
3. Requires frequent application and high rates if it replaces legumes (Data)

IV Management

A. Controlling weeds - Mow as often as weeds need it. This will usually be twice each year.

B. Overgrazing - Dangers of:

1. Perennials must be permitted to store root reserves during spring or fall (Data)
2. Annuals must be allowed to reseed

C. Overgrazing - Prevented by:

1. Providing supplementary grazing during spring, fall and dry periods
   (a). Small grain-winter legumes
      (1). Seed early (Data)
      (2). Seed heavy
      (3). Cross drill
      (4). Apply nitrogen in fall (Slides)
   (b). Sudan grass (Summer grazing)
      (1). Grazed within six weeks of planting
      (2). Tift variety rust resistant (Slide)
      (3). Responds to nitrogen fertilization
   (c). Pearl Millet - (Summer grazing)
      (1). Similar in production to Sudan grass
      (2). Can be grazed earlier than Sudan grass
      (3). Fertilization same as Sudan grass
      (4). Too stemmy for hay
   (d). Kobe lespedeza (Summer grazing)
   (e). Kudzu (Summer and fall grazing)
      (1). Requires 3-4 years to obtain a stand
      (2). Fertilization
         200-400 lbs. 0-18-0 on medium soils
         250-500 lbs. 0-14-7 on poor soils
      (3). Should not be grazed closer than 12-18 inches at any time (Slides)
   (f). Corn and velvet beans
      (1). Suitable for sandy land
      (2). Can be grazed from October to March
      (3). Suited primarily for beef cattle
2. Hay for winter feed
   (a). Alfalfa
   (b). Soybeans
   (c). Lespedeza
3. Silage for winter feed
   (a). Corn
   (b). Sorghum
   (c). Small grain and winter legumes

VALUE OF PASTURE

Adequate pasture is essential for successful livestock production. It is the most economical feed for roughage consuming animals. Research studies and practical farm experience have shown that good pasture will furnish about 45 per cent of the total feed consumed annually by livestock at only 15 per cent of the total annual feed cost.

According to the 1943 Census there were 1,364,000 acres of plowable pasture in North Carolina on which to graze 1,200,000 head of cattle and work stock (Beef cattle, sheep, dairy cattle, horses and mules). This is an average of only 1.1 acres of pasture per animal unit not including hogs or poultry.

The principal pasture problems in the state are (1) to improve the productivity of the permanent pastures and (2), to provide more rotation and temporary pasture crops.

WHAT IS PASTURE WORTH?

It is difficult to determine the true value of pasture for any class of farm animals. This is because pasture has a health value beyond the amount of barn feed it will replace or the amount of milk or meat it will produce per acre. Good pasture will not only cut production costs but will insure a stronger and healthier livestock industry.

Following are some attempts to appraise the value of pasture for dairy cattle and beef cattle:

DAIRY CATTLE

Feed Replacement Basis:

One cow on dry-lot feeding will consume:

	Feed Cost per Day
10 lbs. of hay at $30.00 per ton	$ .15
30 lbs. of silage at $8.00 per ton	.12
8 lbs. of concentrates at $55.00 per ton	.22
Total feed cost per day	.49
Feed cost per month (30 days)	$ 14.70

see pgs- 2 ~~x~~ 4

Foster;

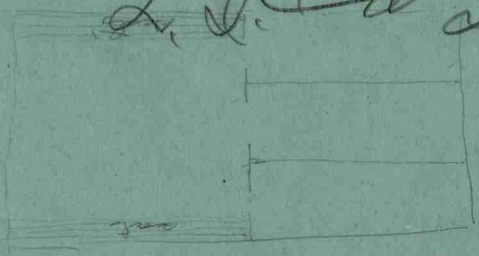
Perhaps the figures in the attached 1931 & 1933 Annual Reports may be of some value in working up material for pasture conferences,

I called E. Y. Floyd who promised to get some material together & send it to Hilton, You & I.

Have written Edmond Aycock for figures on Parrot pasture.

Sorry I cannot help any-more.

L. I. Case



COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF NORTH CAROLINA
STATE COLLEGE STATION, RALEIGH, N. C.

NORTH CAROLINA STATE COLLEGE OF AGRICULTURE AND ENGINEERING
NORTH CAROLINA COUNTIES AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

EXTENSION SERVICE

May 21, 1945

Mr. Edmund Aycock
County Agent
Kinston, N. C.

Dear Mr. Aycock:

On one or two occasions I have seen some rather definite statements made by you in regard to the grazing capacity of the Jim Parrott pasture. We are preparing material for some permanent pasture meetings to be held the latter part of July or the first part of August and are anxious to get anything that we can that will be useful in these meetings. Won't you kindly write me, sending a copy to Dr. J. E. Foster, giving me just as definite figures as you can on the grazing capacity of this ten acres of improved permanent pasture. If your statements can cover more than one year it will be of that much more value. Also do not forget to mention the number of tons of hay that were cut off from these pastures in addition to the grazing days that they furnished.

Thanking you for this information, I am

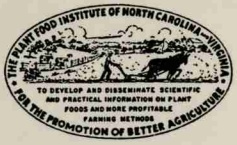
Yours very truly,

L. I. Case, In Charge
Animal Husbandry Extension.

CC: Dr. J. E. Foster
State College
Raleigh, N. C.

PLANT FOOD INSTITUTE
OF NORTH CAROLINA AND VIRGINIA INCORPORATED

S. Y. PRIDDY, PRESIDENT, NORFOLK, VA.
LIONEL WEIL, VICE-PRES., GOLDSBORO, N. C.
T. E. DOYLE, TREASURER, NORFOLK, VA.
J. D. ROBBINS, SECRETARY, ROCKY MOUNT, N. C.



E. Y. FLOYD, DIRECTOR, RALEIGH, N. C.
OFFICES
810-811 ODD FELLOWS BUILDING
RALEIGH, N. C.

May 28, 1945

Mr. J. E. Foster
Animal Husbandry Department
State College Station
Raleigh, North Carolina

Dear Mr. Foster:

Enclosed is some information on pastures which we have accumulated as requested by Mr. Case and I hope it will be of value to you in beginning your pasture campaign.

There is one article which I am sure will not be applicable, but I thought you would be interested in having this information. This is the one with reference to rice in connection with the pasture.

We will send you other information from time to time as we have written several people who have been just as successful in pasture production as those mentioned in the enclosed material.

Very truly yours,

E. Y. Floyd
Director

Enclosure

SUMMARY OF TEN YEARS' EXPERIENCE IN PASTURE DEVELOPMENT ON MY FARM IN YOUNGSVILLE, NORTH CAROLINA AND VICINITY

The oldest pasture I have is ten years' old this spring. To begin with I prepared this land just as I would for a normal seeding of small grain and applied 3 tons of lime, 600 pounds of basic slag and 300 pounds of superphosphate. I seeded 2 pounds of white Dutch clover, 10 pounds of orchard grass, and 10 pounds of red top in the fall and in the spring I seeded 25 pounds of lespedeza, 2 pounds of Dallas grass, and 10 pounds of blue grass per acre.

Each year I have used about 600 pounds of basic slag. The first two years I put on 200 pounds per acre of nitrate of soda to help the grass get established. The next year I used 400 pounds of a 2-10-6 and then the year following 200 pounds of a 2-10-6.

About five years after the pasture was seeded, the carrying capacity for ten months was 2 cows per acre. I normally have to mow the pasture two or three times a year. I consider my pasture just as important as any of the crops I grow on the farm.

Since I developed good pastures, I find it is not difficult to maintain our production of milk, even though we are not in the commercial milk business. We do find, however, that our beef cattle put on very rapid gains when put on pastures with ample plant food.

/s/ W. T. Moss

May 22, 1945

RICE AND FERTILIZED PASTURE ROTATION

Agronomists of the Louisiana State University have reported on a three-year test of rotating improved pastures with rice and the effect of the practice on rice and beef cattle production. The net profit from increased beef and rice production derived through pasture improvement and rotation was over $41 per acre.

Results from grazing the experimental pastures showed that the improved pastures provided good to excellent grazing for 230 to 250 days annually. Pastures seeded and mowed produced 25 to 145 pounds of beef per acre and those mowed, seeded and fertilized, or fertilized and limed, produced 220 to 295 pounds of beef per acre. Pastures not seeded or fertilized produced only 15 to 95 pounds of beef per acre during the eight-months grazing period.

Pastures grazed for two years were turned under and the land disked and planted to rice. Rice obtained from the unfertilized and unlimed plots produced 15.2 barrels of rice per acre, while rice planted after improved pastures had been seeded, fertilized and limed, produced 21.6 barrels per acre.

PASTURE TREATMENT INCREASES MILK SALES

Four years ago, a small pasture belonging to A. B. Young of Titus County, Texas, would support only one cow for every three acres. Now every acre is carrying three cows, which is convincing testimonial to the treatment it has been given.

J. W. McCown, Titus County Agricultural Agent, tells this success story: At the suggestion of the Soil Conservation Service, nearly 10 acres previously planted to crops were turned into a pasture by Mr. Young. It was fenced and sodded to Bermuda grass. But the land was low in fertility, so in two years' time the Bermuda had not made much progress.

In the spring of 1943 this pasture was treated with 100 pounds of P_2O_5 which is the equivalent of 500 pounds of 20 per cent superphosphate. The 10 acres also was seeded to Korean lespedeza that spring, and the following fall Mr. Young planted hop clover.

That's when the big change came about. Before the area was treated, Mr. Young's milk sales were about 900 pounds of whole milk every 15 days, and now he's selling 2,000 pounds in the same period. He estimates this 10 acres during 1944 furnished 335 grazing days per acre. That compares most favorably with 107 grazing days per acre on another pasture of Mr. Young's that's been sodded to Bermuda grass for several years.

1935

ANNUAL REPORT

of

L. I. CASE,

AGENT IN ANIMAL HUSBANDRY,

RALEIGH, N.C.

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

1933

ANNUAL REPORT

OF

L. I. CASE,

AGENT IN ANIMAL HUSBANDRY,

RALEIGH, N.C.

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

I. INTRODUCTION

Following the policy of previous years more attention has been paid to work in the coastal plains and tide water sections of the State than in other parts. In these sections herds and flocks established during the past three years have been worked with in the main, although considerable time has been spent on older established livestock farms, and in advising prospects.

No especial effort has been put forth in attempts to establish new herds with the thought that success with herds already established, would in itself accomplish most in the way of promotion.

Work has been handicapped this year by lack of travel funds and County Agents being occupied so completely by cotton, tobacco and wheat reduction programs. For these reasons time and travel have been devoted for the most part to projects considered of most importance that were already under way.

II. PLAN OF WORK FOLLOWED

Pastures. No further work was started with reference to:

(a) The most practical means of establishing pastures.

(b) The best pasture mixtures on various soil types.

It was planned to make further observations on projects (a) and (b) started in 1931, and 1932 but no extension travel fund available from July 1st to September 1st made this impossible.

A rather extensive project in pasture establishment is tentatively planned for the Blackland Station, Wenona, N.C. to start this year and be carried over several years. It involves preparing and seeding immediately against the growing of summer and winter annuals, grazing same with cattle and turning the residue under for probably three years prior to seeding to permanent pasture. The productivity of both annual and permanent pastures will be measured with cattle.

(c) Carrying capacity of pastures of various kinds.

Records of approximately 300 pounds per acre gain on carpet grass and lespedeza pasture secured in 1931 were substantiated by a record of 330 pounds per acre gain from April 26 to October 25, 1933. This pasture is nine years old, has been grazed heavily, has never been fertilized except by droppings from livestock.

Comparative Profits of Pasture versus Cotton.

Three hundred and thirty pounds of beef at 4 cents per pound equals $13.20 profit. This same farm produced in 1933 an average of about 275 pounds of lint cotton per acre at an average net profit of $8.46. It is rather difficult to get at the cost of the pasture and overhead cost of cattle but feel it is safe to say that pasture profits, even at the low

price of beef exceeded the profits on cotton when both are calculated on a per acre basis.

Value of Reeds (Arundinaria tecta) for Summer Grazing.

At the Blackland Station, Wenona, N.C. an attempt was made to compare reeds with Blue grass pasture for summer grazing. On May 15th 17 head of yearlings averaging 501.18 pounds were turned on 12 acres of reeds. The grazing season was delayed due to fire. They were changed as it seemed necessary, back and forth between this 12 acre tract and another 18 acre area. The average gain from May 15th to November 8th was 108.55 pounds, or a total of 1829.01 pounds.

On tame pasture 9 head of yearlings averaging 475.56 pounds each at the start of the season, grazed 7.21 acres from April 12th to June 21st when it became necessary to move them due to drought. The new area contained about 10 acres of poor pasture which consisted of about half blue grass and half native grasses. This area was also grazed part of the season by a small flock of sheep. They were put back on the original area July 31st where they remained until November 8th. The average gain for the season was 211.11 pounds or a total of 1900 pounds for the nine head.

The many complications arising from fire and drought made it impossible to draw any direct conclusions relative to the comparative carrying capacities of reeds versus blue grass. It appears, however, that blue grass had the best of it in 1933 although this is contrary to previous findings.

(d) Pasture Fertilization, E. E. Bell Farm, Jones County.

In the spring of 1932 a 14.2 acre pasture consisting mainly of carpet grass with lesser amounts of lespedeza, dallis grass, hop clover, blue grass and white dutch clover was divided equally and one side fertilized at the rate of 400 pounds of 4-8-4 per acre. The season was exceedingly dry, therefore no results of consequence were obtained.

The same fertilizer application was repeated in the early spring of 1933 and the entire area reseeded to lespedeza.

The plan was to keep both plats grazed equally close and measure the productivity of fertilized and unfertilized plats in pounds of beef. This plan was carried out as well as possible although both plats would have carried more cattle than were available at certain periods of the season.

The grazing season lasted from April 26th to October 25th, 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 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 no doubt represent 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 probably not be all credited to the one year's application as there was probably some carry over from the previous year.

The accompanying graph shows progressive gains of cattle throughout the season. Weights were taken every 14 days with the exception of the first month.

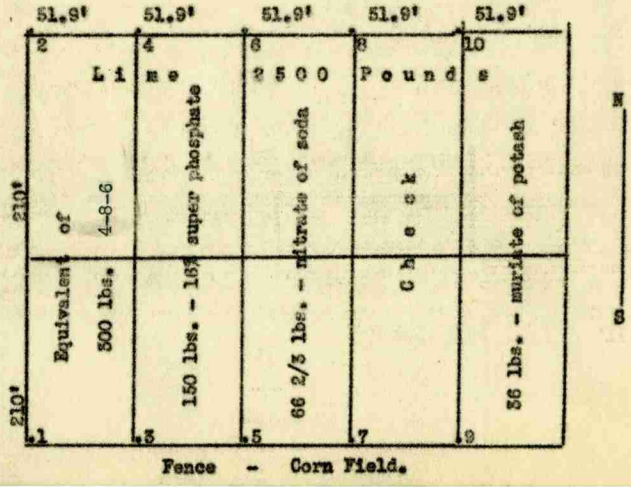
(d) Pasture Fertilisation

Blackland Experiment Station, Wenona, N.C.

This work was carried out on peat soil which had been cropped in corn for 8 years, and cow peas one year. No fertilizer had been used but lime at the rate of one and one-half tons per acre had been applied every two years.

Plan of Experiment

Each plat 1/4 Acre.



Rate of Applications

1000 lbs. lime - per acre
600 " - 4 - 8 - 6 — equivalent per acre
500 " - 16% superphosphate per acre.
133 1/3 lbs. - nitrate of soda per acre.
72 lbs. - muriate of potash per acre.

First applications 1931.

All except lime repeated in 1932 and 1933.

May 27th, 1933 - Each plat cut with hay mower. Grass was weighed May 29th when pretty well cured. (Rain prevented weighing green). No cuttings were made in 1931.

Plat 1 (4-8-6)	- 299 lbs.	Plat 7 - Check -	175 lbs.
Plat 2 (4-8-6) + Lime	- 207 lbs.	Plat 8 - Lime -	118 lbs.
Total	506 lbs.	Total	293 lbs.

Difference in favor of Fertilizer (1933) - 213 lbs. partially cured

Difference in favor of Fertilizer (1932) - 339 lbs. green

Plat 3 - P.	142 lbs.	Plat 7 - Check -	175 lbs.
Plat 4 - P. + Lime	128 lbs.	Plat 8 - Lime -	118 lbs.
Total	270 lbs.	Total	293 lbs.

Difference in favor of Check (1933) - 23 lbs. partially cured

Difference in favor of Check (1932) - 45 lbs. green

Plat 5 - N	260 lbs.	Plat 7 - Check	175 lbs.
Plat 6 - N + Lime	158 lbs.	Plat 8 - Lime	118 lbs.
Total	418 lbs.	Total	293 lbs.

Difference in favor of N. (1933) 125 lbs. - partially cured

Difference in favor of N. (1932) 76 lbs. green.

Plat 9 -	K	191 lbs.	Plat 7 -	Check	175 lbs.
Plat 10 -	K - Lime	141 lbs.	Plat 8 -	Lime	118 lbs.
	Total	332 lbs.		Total	293 lbs.

Difference in favor of K (1933) 39 lbs. - partially cured.

Difference in favor of K (1932) 29 lbs. - green.

Note:

As was reported in 1932 a hard wind in the spring of that year blew large amounts of top soil from a corn field on to the north edge of plats. For a few feet the sod was completely covered. Then for 18 or 20 feet grass was greatly benefited. The effect of this top soil was still in evidence in the spring of 1933. Therefore, no fair comparison between limed and unlimed areas can be made.

Value of Crop Gleanings

Report of third year's work and summary of three years on W. W. Jarvis Farm, Currituck County.

The third year of the winter gleaning studies on the Jarvis farm in Currituck County, 58 head of cattle were carried for ninety-three days on 99 acres of corn stalks and 75 acres of soybean stalks, making an average daily gain of .158 pounds. The number of cattle days was 5394. The cattle did not winter as well as the previous two years in which daily gains for 1930-1931 were .603 pounds for 4750 cattle days and for 1931-1932 were .545 pounds for 4959 cattle days. More cattle and a larger percentage of cows nursing calves no doubt accounts for the smaller gains during the season of 1932-1933.

A summary of three years work shows 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 .559 pounds. To put this on a thousand pound animal basis it would require 5.05 acres of similar percentages of corn and soybean stalks to maintain one animal 100 days.

The conclusion that may be drawn from this work is that dry cows and mature or nearly mature cattle can be wintered reasonably well for approximately 100 days on crop gleanings from corn and soybean stalks.

Cows nursing calves, cows and heifers due to calve during the wintering period, and young cattle weighing less than 500 pounds should have supplementary feed.

More general conclusions that may be drawn from this work are as follows: Unless definite provision is made for supplementary feed there is a gap between permanent pasture and completion of harvest in the fall, and again between soil preparation and pasture in the spring during which periods cattle will lose weight. These gaps may be filled in one or more of several ways as follows:

Fall Period

Reserve permanent pasture
Annual grazing crops
Silage
Harvested feed.

Spring Period

Winter legumes
Silage
Rye grass on permanent pasture
Harvested feed.

Steering and Hogging Down Corn and Velvet Beans

On Geo. L. Pate Farm, Raynham, N.C.

1933 - 1934.

Twenty (20) acres used in trial. One-half corn was gathered, it being a share crop.

Estimated amount of corn remaining in field 225 bushels.

A good stand of velvet beans, well fruited and well matured. (Rate of seeding, 1 peck per acre).

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

Steers taken off January 2, 1934 and placed in feed lot.

Hogs taken off January 4th.

Eighteen heifers added to field December 19th, and taken off January 16th.

Total cattle gains -	3415
Total cattle days-	1801
Average Daily Gains all cattle	1.896
Average Daily Gains steers Nov. 21 to Jan. 2, 42 days -	2.05 lbs.
Total Hog Gains -	1265
Average Daily Hog Gains -	1.105
No. Pounds of corn, shelled basis, per 100 pounds beef produced -	369.06
No. Pounds of corn, shelled basis, per 100 pounds of beef and pork produced -	269.25

MISCELLANEOUS

Finishing Cattle in Western North Carolina

In Western North Carolina the majority of cattle raisers sell their surplus as feeders at two years of age. In order to test the practicability of finishing some of these cattle for the market a farmer in Buncombe County who had some surplus feed was persuaded to feed twelve head of steers. They were given a short feed of 78 days and the corn, corn stover and rye raised on the farm was supplemented by cottonseed meal and hulls. Gains ranging from 80 to 130 pounds were satisfactory considering the quantity of feed consumed.

The farmer who did the feeding drew the following conclusions:

1. That feeding steers for the local market is profitable when a surplus of feed is produced.
2. That high grade cattle are more profitable to feed than low grade with the usual differential in costs of high and low grade feeders. The better bred steers gained an average of 1.78 pounds while the common ones gained as low as 1.09 pounds per head per day.

Feeding For Market in Eastern North Carolina

The finishing of cattle for the market has never come to be a general practice in Eastern North Carolina due mainly to the lack of surplus feed production and to the inaccessibility of feeder cattle. The source of supply of feeders is mainly in Western North Carolina, which involves a large shrink and freight bill in getting cattle to the feed lot. There is no "Feed in Transit" rate. Then the feeder must pay another freight bill and absorb another shrink in getting the cattle to market unless they are sold locally which is not generally profitable except with low grade cattle.

In the winter of 1932-'33 twenty-three cars of cattle were fed in the east under the more or less careful supervision of this office. In most cases money was lost because medium and good cattle cost from 5 to 6 cents per pound f.o.b. the mountains, and brought 4 to 4½ cents per pound when finished.

This winter, 1933-'34, between 40 and 50 loads are being fed, some of which have already been sold. Feeder prices were lower than in many years, the top prices in most cases being 3½ cents per pound. Several loads of cattle have already been sold and prices have ranged from 4 to 5 cents per pound farm weights.

In several cases assistance has been given in purchasing, feeding and marketing.

Beef Cattle and Sheep Improvement

In the spring of 1933 arrangements were made with two breeders of Hampshire sheep to conduct sales of rams and ewes in points in eastern North Carolina where there appeared to be a demand. In these sales 16 purebred rams were placed at an average price of $12.00 per head and 12 purebred ewes an average of about $9.00 per head.

Fourteen purebred beef bulls and eleven purebred beef females were selected for breeders of purebred and grade herds.

Work Stock

The shortage of work stock and the resulting high prices have caused considerable interest in the raising of mules and horses. Assistance has been given in the placing of twelve grade mares and two purebred Percherons. Also two jacks and a draft stallion have been placed. In addition, several car loads of mules have been brought in by farmers and dealers from St. Louis, and Atlanta.

Farm Reorganizations

Assistance was given five land owners in reorganization of their farming systems to include beef cattle as a definite farm enterprise.

Barn Plans

Plans in more or less detail for two beef cattle and one sheep barn were worked out during the year.

Trench Silos

In 1930, as far as could be ascertained, there were no trench silos in use in North Carolina. A few were dug and used in 1931 and this winter there are about two hundred in use. Silage from these low cost silos is reducing the cost of wintering and finishing cattle and it is predicted that many more hundreds of farmers will be using them within the next few years.

Sheep Records

It was planned at the beginning of the year to have several sheep records kept. This work was to have been done through interested county agents. Only a few were completed. The best record came from Alleghany County where from a small farm flock of 18 ewes 161 per cent lamb crop was raised. The lambs were sold for 8 cents per pound, grossing $130.00. A wool clip of 108 pounds was sold for 32 cents per pound or $34.56. The gross return per ewe was $9.14.

Creep Feeding

Two cattle farmers were induced to creep feed their calves. No records were kept but in both cases the owners expressed satisfaction in results obtained.

Meats Work

During 1933 R. E. Nance conducted the following killing, cutting and curing demonstrations in the State:

	No. of Demonstrations	Attendance
Pork	24	764
Beef	4	105
Lamb*	30	7220

* In cooperation with representative of National Livestock and Meat Board.

In addition literature on meat curing was sent to 223 persons and instructions for home tanning of hides to 1041 persons. These were in response to mail requests.

Publicity

Clippings of news articles prepared by the author and printed in State papers during the year appear on the following pages.

Statistical Report.	1933
Number of days in field	128
Number of days in office	172
Number of days on leave	10
Number of auto miles traveled	16133
Number of rail miles traveled	193
Number of air miles traveled	0
Number Method Demonstrations	13
Attendance	82
Number of Meetings Addressed	21
Attendance	487
Number of Farms Visited	151
Number of Office Consultations	42
Number of Letters Written	540
Number of Circular Letters Prepared	8
Number of Circular Letters Sent	938
Number of Bulletins Sent Out	55
Number of Articles Prepared	14
Number of Beef Bulls Personally Selected and Placed	14
Number of Purebred Females " " " "	11
Number of Purebred Rams " " " "	16
Number of Purebred Ewes " " " "	10
Number of Children Completing 4-H-Club Project with Beef Cattle	