NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

N. C. STATE COLLEGE OF AGRICULTURE AND ENGINEERING
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COOPERATING
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NARRATIVE REPORT

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ANIMAL HUSBANDRY ..... SPECIALIST

1935

ANNUAL REPORT

OF

EXTENSION WORK IN ANIMAL HUSBANDRY

IN

NORTH CAROLINA

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INTRODUCTION

Animal husbandry extension work was carried on in all parts of the State during 1935, with the majority of time and effort given to the western districts. Here the growing of beef cattle, sheep and work stock has always been of major importance and farm animals have been used to consume grass and hay which are the main crops of this area.

In view of the fact that many of the breeding herds and flocks are small it often happens that the individuality of the service sire has not been of as high an order as could be desired. Other weak spots have been in feeding and management. Extension projects have, therefore, been planned for the purpose of first making the farmer conscious of quality, or lack of quality in his stock, and then to create a desire for better individuals.

As has been stated, grass is the main crop in western North Carolina. Pastures are not as productive as they should be. Emphasis has therefore first been placed on pasture improvement. The Tennessee Valley Authority's program of soil conservation has greatly aided in this and results have been very gratifying.

Along with pasture improvement better winter feeding has been of equal importance. The main effort in this line has been centered around the production of silage crops and the construction of silos, especially the trench type.

Shows and sales of both fat and breeding animals have been valuable in calling attention to better individuality and the value of better feeding.

In sheep work the grading and cooperative marketing of lambs has proved of very great value in calling the producer's attention to the value of better breeding, feeding and managerial practices.

An increased interest has been aroused during the year in the feeding of cattle for the market. More and more farmers are becoming conscious of the advantages of winter feeding for creating a market for surplus feed and most of all, for the production of manure for soil improvement.

Results of Extension Work

1. Purebred Breeding Stock Placed

During the year fourteen purebred bulls and eighteen purebred females were personally selected for farmers. County agents placed 96 bulls and 112 purebred females. Eight purebred rams were placed by the specialist and 43 rams by county agents. In addition county agents placed 18 registered ewes.

Considerable interest has been shown in the breeding of work stock in several counties of the State. Seventeen purebred sires (stallions and jacks) and 78 high grade or purebred mares were placed thru the assistance of extension workers. Two community stallions were placed.

2. Demonstration Herds and Flocks

Ninety-one herds of cattle and thirty flocks of sheep were used during 1935 as object lessons for stockmen in that many communities. Meetings were held on the farms and or result demonstrations conducted, the object being to point out improved practices in breeding, feeding and management.

3. Pastures

Pasture work has been done by specialists in agronomy, dairy and animal husbandry work. The number of demonstrations in pasture establishment and improvement totaled 888 in 58 counties. The greater part of this work consisted in the application of phosphate and other phases of pasture fertilization and management.

4. Winter Feeding

The provision of adequate winter feed for cattle and sheep has been a weak spot in stock raising. Feeling that a more general use of silage would be a decided step forward toward better wintering, the trench silo has been advocated for the past several years. Five years ago there were few, if any, trench silos in use in the State. Now they are in quite general use and 453 silos of all kinds were built in 50 counties of the State during 1935. The great majority of them are of the trench type, bringing the total now in use up to over one thousand. These are on beef, dairy and sheep farms with no definite way of differentiating.

5. Velvet Beans

Velvet beans for winter grazing and soil improvement have been advocated by both the agronomy and animal husbandry specialists in eastern North Carolina, particularly on the lighter types of soils. Reports show that eleven counties conducted 27 demonstrations in growing velvet beans with corn. Observations show that velvet beans and corn stalks, after the corn is harvested, do excellently for wintering cattle. Where the acreage is sufficient beef type cattle come thru in splendid condition.

6. Steering and Hogging Down of Velvet Beans and Corn

A demonstration of steering and hogging down corn and velvet beans was conducted during the winter of 1933-1934 in Robeson County. Twenty acres of corn and velvet beans were used in this first trial and one-half of the corn was gathered. There was approximately 225 bushels of corn remaining in the field. There was a good stand of well fruited beans altho no attempt was made to obtain the yield. Thirty head of steers averaging 604 pounds each were turned into the field on November 21 where they were kept for 41 days. The average daily gains were 2.05 pounds. Twenty-six hogs weighing an average of 125 pounds each were run in the same field for 43 days and they gained an average of 1.105 pounds per head daily.

On a corn yield basis it required 269.23 pounds of corn to produce 100 pounds of beef and pork.

1934-1935 Trial

The second trial was not as favorable due largely to a poor crop of velvet beans. This year again, not taking the velvet beans into consideration, it required 320.54 pounds of corn to produce 100 pounds of beef and pork.

1935-1936 Trial

The third trial was enlarged somewhat, there being three fields of corn and beans set aside for use. This trial is not complete yet but favorable results are indicated.

7. Fattening Cattle for Market

There were something over eleven hundred head of cattle put on feed during the fall of 1935. In some cases assistance was given in the selection of these cattle for the feeder and in others advice was given regarding rations, time to market and where to market.

The highest quality lot of cattle now on feed in the State are long yearling Hereford steers that were bought as calves the fall of 1934. These were ordered on the advice of the Animal Husbandry Specialist from the Fort Worth market.

One cooperator in the Sand Hill section of the State where he manages several large peach orchards, started feeding cattle three years ago, mainly for the manure to put under his peach trees. He was so pleased with the results that he bought five car loads on the Kansas City market the fall of 1934. Of course, the rise in the market gave him a substantial profit, but his 1000 tons of manure he considered much more valuable than the cash profit.

The fall of 1935 he bought 154 head of steers in Western North Carolina. These have not yet been sold.

8. Value of Manurefor Peach Orchards

A project to determine the value of manure from fattening cattle for peach orchards was started in the spring of 1935 in cooperation with the Department of Horticulture. Several blocks of trees were treated with varying amounts of manure and or commercial fertilizers. This is a long time experiment and no results can be reported.

9. Stock Show

With the view of creating interest in better quality cattle in Western North Carolina the Asheville Chamber of Commerce was interested in sponsoring a fat cattle show. Nearly $500.00 was raised for premium money and other expenses and a show was held October 9th. A report of the sale follows.

Grand Champion sold for $17.00 per cwt., wt. 760 lbs., Total $129.20
Reserve Champion sold for $13.00 per cwt., wt. 845 lbs., Total 109.85

55 Head # sold at a weighted average of $7.74 per cwt.
53 Head * sold at a weighted average of 7.37 per cwt.

In order to throw some light on what weight cattle sold to best advantage the following summary of sales is made.

9 Head (excluding champions) weighing over 700 lbs. each, Av. $8.36 per cwt.
18 Head (excluding champions) weighing over 600 " " " 7.54' " "
35 Head (excluding champions) weighing over 500 " " " 7.46 " "

Only 12 head sold for less than $7.00 per cwt. and most of these were poor individuals, or in poor condition or both.

Including 2 champions but not including 4 Head groups
* Excluding 2 champions
' Includes two quite poor unfinished animals.

10. Grading and Cooperative Selling of Lambs

Two thousand three hundred and fifty-five lambs were graded and shipped cooperatively during 1935. This was the first year of this work in one county and the second in the other. A standard system of grading and marking was used and the lambs were shipped to The Eastern Livestock Cooperative Marketing Association of Jersey City, New Jersey. This organization sold the lambs according to grades and each producer was reimbursed for his individual lambs according to grade and weight. All expenses and shrinkage in transit were prorated.

The 2355 lambs were shipped by 193 farmers at a net price of $12,958.85 which represented a saving of $960.76 to the farmers which is based on prices paid by country dealers. Furthermore, the price paid non-cooperators was increased by dealers in an attempt to discourage cooperative shipping.

The most significant value of lamb grading and selling has been in the effect it has had on quality improvement. Producers who have cooperated have almost invariably become definitely conscious of what it takes to make the better grades of lambs and have taken steps toward improvement thru the securing of better rams, by more regular treatments for parasite control, docking and castrating and better feeding.

11. 4 H Club Work

4 H Club enrollments were as follows: Beef Cattle, 73; Sheep 6, and Horses 6. Completions were: Beef Cattle 30, Sheep and Horses 2. This was the first year that the animal husbandry specialist has made any attempt to do 4 H Club Work and then only in the baby beef project. Nine counties exhibited 30 calves at the Asheville Fat Stock Show.

12. Research

Work has been done thruout the year in cooperation with Research workers in the following projects.

Blackland Station, Wenona, N.C.

1. "To Study the Gains, feed utilization and economic value of finishing two-year old steers for market as compared with yearling steers of similar origin and breeding, and make a study of the influence of age on the quality of beef."

2. "To study the relative value of tame pasture (Kentucky, Blue Grass and Common Lespedeza) and native reeds (Arundinaria tecta)."

3. "To determine the value of corn field gleanings for wintering beef cattle."

4. "To study methods of establishing pastures in the Blackland area."

Piedmont Station, Statesville, N.C.

1. (a) "To study crops adapted to supplementary pasture with reference to the shortage of permanent pasture and to the extension of the normal grazing period."

(b) "To study pastures and forage crops with reference to means of reducing the need for purchased feeds on Piedmont farms."

13. Miscellaneous

In addition to the foregoing, work has been done in the following lines: (a) Judged cattle, sheep and work stock at three county fairs within the State; (b) judged baby beef classes at the South Carolina State Fair and worked with a committee of three in judging a fat cattle show at Jacksonville, Fla.; (c) served as superintendent of the Beef Cattle and Sheep Departments at the North Carolina State Fair; (d) assisted with the State 4-H-Club judging contest; (e) assisted with the plans for cattle barns, sheep sheds, feeding sheds and silos.

14. Meats

During the year Mr. R. E. Hance put on 23 hog slaughtering, cutting and curing demonstrations in eleven counties. The approximate attendance at these demonstrations was 1074. Requests were received from thirty-four counties for this type of work.

Lamb slaughtering work was done in one county which resulted in direct selling to the retailers at an increase in returns to the producers of three cents per pound live weight basis as compared with the prevailing price paid by country buyers.

Statistical Summary

Number of days in field	189
Number of days in office	112
Number of days on leave	21
Number of auto miles traveled	22,298
Number of rail miles traveled	556
Number of Method Demonstrations	33
Attendance	150
Number of Meetings Addressed	18
Attendance	582
Number of Farms Visited	295
Number of Office Consultations	65
Number of Letters Written	716
Number of Circular Letters Prepared	31
Number of Circular Letters Sent	2,063
Number of Bulletins Sent Out	128
Number of Articles Prepared	19
Radio Talks Given	1

Outlook

If the recommendations of The Production Planning Section are carried out there will be an increase in the number of head of livestock kept upon farms due to increase in the production of pasture and feed crops. This will be true, especially in certain sections of the State. The same general policies in regard to improved breeding, feeding, and management will be followed. However, emphasis will be placed upon better sires work, an increase in 4-H-Club work in beef cattle, and a more general participation in grading and cooperative shipping of lambs.

News articles on pgs-12, 13, 14
Place on Kodaks for 1936 Report.

REPORT OF WORK ACCOMPLISHED AND WORK NOW UNDER WAY WITH BEEF CATTLE AND RELATED LIVESTOCK PRODUCTION, MARKETING AND MEAT UTILIZATION PROJECTS IN AREAS RELEASED FROM QUARANTINE. THE SAME COVERING CO-OPERATIVE EFFORT BETWEEN THE BUREAU OF ANIMAL INDUSTRY, UNITED STATES DEPARTMENT OF AGRICULTURE AND THE ANIMAL HUSBANDRY DEPARTMENT OF THE NORTH CAROLINA STATE COLLEGE OF AGRICULTURE

BY

L. I. CASE

AGENT IN ANIMAL HUSBANDRY

STATE COLLEGE STATION, RALEIGH, N. C.

MAY 22, 1935.

The Coastal Plains and Tidewater sections of North Carolina were, prior to tick eradication, the possessors of relatively large herds of plain cattle. Tick eradication had a marked unsettling effect and many cattle owners sold their herds, thinking that dipping and the expense of fencing would more than offset any profits that might be derived from the business. Another retarding factor was the prevalence of land ownership in large tracts of either cut over timber or land being operated by tenants.

In 1930 when this cooperative effort was started there was some interest being shown in beef cattle and other livestock. This interest was, on the one hand, in cattle raising on an extensive scale on land that was producing no revenue, and on the other hand in livestock as an adjunct to cash crop farming. Progress was being handicapped, however, due to a dearth of knowledge relative to breeding, feeding, and management methods most practical under existing conditions..

The foregoing gives very briefly some idea of the multiplicity of problems that demanded study before much progress could be made in the livestock field.

I. BEEF CATTLE

1. Cost Data on Maintaining Beef Herd and Producing Calves and Yearling Stockers

It has been believed practical and profitable to raise beef cattle in the blackland areas of Eastern North Carolina. However, only relatively small numbers of cattle are kept in this territory. In order to obtain some definite figures a record of all costs were kept for the three year period, 1930, 1931 and 1932 at the Blackland Experiment Station at Wenona, N.C.

How Various Items Were Charged

Reed Pasture - Rent on land plus cost and maintenance of fences.

Stalk Fields - Cost of fencing and maintenance of same.

Winter Pasture- Cost of seed.

Other Feeds - At market price on the farm

Other Items - Such as labor, equipment, interest on investment, risk, taxes, insurance, and veterinary services were charged at actual cost.

Manure - Was credited at 80 per cent of the manurial value of the feeds fed.

Average Cost, Three Year Period

Cows (Native) Maintenance per year	$12.45
Bull (Registered Hereford) maintenance per year	61.39
Calves - To weaning age, 7 to 10 months	22.50*
Yearling stockers - 18 to 21 months	28.91*

* Includes cow and bull maintenance costs.

Note: The above costs of raising calves and yearlings is higher than normal, due to a short calf crop in 1931. This was due to starting the practice of limiting the breeding season to three months

rather than allowing him to run continually with the herd. The calf costs of $22.43 in 1930, $31.44 in 1931, and $13.61 in 1932 illustrates rather forcibly the relation of the size of the calf crop to the cost of production. The percentage calf crop for the three years was 93, 62 and 100 respectively.

2. Value of Crop Gleanings

In many sections of Eastern North Carolina large acreages of corn and soy beans are grown, the grain harvested in the fields and no use made of the stalks. In order to obtain information on the value of such field gleaning, records were kept on a farm for three successive years.

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.

The acreage required will necessarily 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.

Similar work under way at the Blackland Experiment Station corroborates the above findings.

3. 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 when 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 Jan. 2, 1934.

Hogs were taken off Jan. 4, 1934.

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

Total cattle days	1801
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 was 1.59 pounds while the hogs gained 1.18 pounds per head per day.

Again, not taking the velvet beans into consideration, it required 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.

4. Purebred Hereford Bull versus Scrub

The beef cattle work carried on at the Blackland 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 1.78 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.

5. 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 unthriftiness 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 1st to November first on fall dropped calves were 199.55 pounds as compared with 271.5 pounds on spring dropped calves.

The result of this work is a controlled breeding season in many of our herds rather than allowing the bull to run with the cows continually.

6. 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.

7. Vitamin A Studies with Beef Cattle.

A definite toxic substance, gossypol, has been extracted from cottonseed meal and it was thought for many years that this alone was responsible for the disastrous effects incurred when animals were fed large amounts of cottonseed meal. However, the following report of vitamin A studies with beef cattle presents evidence that in spite of the gossypol present cottonseed meal can be fed, if properly supplemented, for much longer periods and in much larger amounts than is necessary under practical feeding conditions.

A basal ration composed of 50% cottonseed meal, 25% cottonseed hulls, and 25% dried beet pulp plus 1% mineral, proved to be inadequate for steers and the animals died in 6 to 7 months. However, after six months feeding on this ration complete recovery was attained when the ration was supplemented with cod liver oil. Substitution of yellow corn for one-half of the cottonseed meal in the basal ration was no more satisfactory than the basal ration, since it was necessary to add cod liver oil after an average of 211 days on the yellow corn ration and after an average of 231 days on the basal ration. When the basal ration was supplemented, from the beginning, with 1 oz. of cod liver oil daily per animal, no ill effects were apparent during a period of 415 days (average). The addition of 10% alfalfa leaf meal to the basal ration proved effective for 453 days after which it was necessary to add cod liver oil in order that the animal be satisfactory for slaughter after 666 days on feed.

A ration composed of 26 pounds cottonseed meal, 27 pounds cottonseed hulls, 26 pounds white corn, and 20 pounds ground soy bean hay caused beef type heifers to grow and gain normally until they were slaughtered after 375 days on this ration.

This work was started in 1929 and will be continued.

II. SHEEP

1. Value of Purebred Rams

In some sections of Eastern North Carolina there are a high percentage of very common sheep. In many of such flocks there is little effort made to improve them thru the use of good rams.

In order to determine the value of purebred rams when used on these common Native ewes an upgrading experiment was started at the Central Experiment Station several years ago.

The results show that the crossing of either purebred Shropshire or Hampshire rams on Native ewes produced lambs that were much more blocky, thicker fleshed, and early maturing than lambs sired by Native rams. The mature half-blood ewes were 50 per cent larger than their dams, sheared 138 per cent more wool of better quality, and 49 per cent longer staple and produced 44 per cent more twins.

The second cross or three-quarter blood lambs and yearlings show still further improvement in type, quality, conformation and length of time required to reach market weight, but the amount of improvement was not as pronounced as in the first cross. The three-quarter-blood lambs compared very favorably with purebreds of the Shropshire and Hampshire breeds.

Comparison of Breeds in Upgrading.

The Hampshires, both as market lambs and breeding ewes, were larger than the Shropshire crosses but the Shropshires on the other hand were more blocky, and carried heavier fleeces than the Hampshires. More twins were produced from the first cross Shropshires but the lambs were not as early as the first cross Hampshires.

At weaning, July 1, 1934, the average weights of lambs were as follows: Native 35 pounds; three-quarter-blood Shropshires, 61 pounds; three-quarter blood Hampshire, 73 pounds; and purebred Hampshires 77 pounds.

2. Sanitation as a Method of Controlling Stomach Worms in Lambs

Stomach worms (Hoemanchus contortus) are a serious handicap in the production of market lambs and is often the cause of farmers going out of the sheep business.

Many experiment stations throughout the states have experimented with various treatments for the control of stomach worms and there are several materials that have been proven efficaceous when used at frequent intervals. However, our moist climate requiring treatments every fourteen days when sheep are on limited areas of permanent pastures has been a very discouraging factor in the sheep business. For this reason a project was designed to study the effectiveness of stomach worm control thru the use of annual pastures as compared with permanent pastures.

The results of four years' work follow:

1. Lambs grazed on annual pastures of Abruzzi rye and crimson clover seeded in early September, oats seeded in February and March, and soybeans seeded in May and June, and not drenched, gained more rapidly and reached market weight sooner than similar lambs that were treated regularly and grazed on permanent pasture.

2. Gains and post mortem examinations showed it unnecessary to treat lambs on permanent pasture prior to June 1st. However, from June 1 to November 1 treatments every 14 days were necessary.

3. Drenching without fasting produced more rapid gains than with fasting, but post-mortem examinations showed slightly greater infestation in the unfasted group.

4. Nodular worms are not noticeably affected by drenching with nicotine sulphate but are checked somewhat by the use of annual pastures.

5. Ground on which annual pastures are grown and grazed by sheep year after year, will gradually become infested with parasites.

6. Systematic use of annual pastures will control stomach worm and other internal parasitic infestation in sheep so that normal growth of lambs will be secured.

III. SWINE

1. A Comparison of Protein Supplements for Fattening Pigs.

Fish meal has been the usual protein supplement used in fattening hogs for the market in the eastern part of North Carolina. However, cotton seed meal and soybean meal are both cheaper and are also produced from agricultural crops grown in this area.

For the purpose of determining the practicability of utilizing cottonseed meal and soybean meal in conjunction with fish meal in feeding swine three years' work has been done at the Blackland Station, Wenona, N.C.

The results of this work with 196 pigs comparing fish meal with a mixture of equal parts fish meal, cottonseed meal, and soybean meal showed that the pigs receiving the mixture produced more rapid gains, required less total feed per unit of gain and as a consequence were more profitable.

2. Soft Pork Studies

Utilization of waste peanuts by hogs in Eastern North Carolina has resulted in many of our hogs killing soft with a consequent lowering of prices paid by the packers for hogs going to market from peanut areas.

Results of experimental work done here has proven that pigs fed peanuts from weaning time to 100 pounds weight and then finished on corn supplemented with 13 per cent or more cottonseed meal will not only grow and finish normally but will also produce a carcasses of satisfactory firmness at optimum market weights.

3. Vitamin A Deficient Rations

Generally accepted swine rations of white corn, fish meal and minerals fed in dry lot has resulted in nutritional troubles that this station has recently proven to be lack of vitamin A. Troubles resulting from such rations have been corrected by green crops, alfalfa hay, soy bean hay, cod liver oil and by substituting yellow corn for white corn.

4. Crop Utilization

The object of this experiment is to compare crop yields and financial returns under two methods of utilizing the crops.

The rotation is corn, cotton, soybeans.

Plat 1 All crops are harvested

Plat 2 Fertilized same as Plat 1, and all edible crops hogged off.

The measure of results is in pounds of seed cotton which has been gradually increasing on Plat 2. The 1934 crop of cotton was 874 pounds on Plat 1, and 1209 pounds on Plat 2, or a 38 per cent increase in favor of the hogging off of the crops.

This project will be continued.

IV. PASTURES

1. Methods of Pasture Establishment.

Two methods of establishing pastures are used in Eastern North Carolina. One is by careful preparation of the soil, destroying all native vegetation and the making of a good seed bed. The other method consists of burning or brushing followed by disking prior to seeding.

In order to compare these two methods two acres of land on a farm in Bertie County were prepared and seeded as follows:

A - 1 Acre

Disking, 1 hour, one man and tractor	$1.25
Breaking - 5 hours, one man, 2 horses	2.25
Disking - 1 hour, 25 mins. one man and tractor	1.04
Total cost	$4.54

B - 1 Acre

Disking - 1 hour, one man and tractor	$1.25

A mixture of Lespedeza, Carpet Grass and Dallis Grass was sown on both acres which were harrowed before and after seeding.

Results

Both acres produced a very good stand of grasses and Lespedeza.

Observation 1st Year

"B" contained higher percentage of native grasses.

Both acres grazed with cattle and sheep and both mowed to control foreign vegetation.

Observation 2nd Year

Still good stands of improved pasture plants on both plats with native grasses showing some diminution in preponderance on "B".

The results here correspond with observations elsewhere and point to the following conclusions. If a farmer wants a small area of good pasture in a minimum length of time it will pay to go to the extra expense of carefully preparing the land. On the other hand, brushing and disking together with close grazing will eventually result in a good pasture at less expense per acre.

Further observations will be made on these plats and results reported.

2. 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.

3. Carrying Capacity of Pastures.

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 8 to September 8. This was at the rate of 208.45 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 294.81 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.

4. Pasture Fertilization

Most farmers fertilize their annual crops but few of them ever fertilize their permanent pastures. In order to determine the practicability of using fertilizer on pasture a test was carried out on a farm in Jones County for three successive years. The pasture consisted of 14.2 acres of Carpet Grass, Lespedeza, Dallis Grass, Low Hop Clover,

Blue Grass, and White Dutch Clover with Carpet Grass predominating. It was established in 1925, had been grazed heavily and no fertilizer applied. The soil is a fine sandy loam with a clay subsoil and a pH of 6.37 at the beginning of the test.

The 14.2 acres was divided equally and one side fertilized at the rate of 400 pounds per acre of a 4-8-4 fertilizer.

Both sides were grazed with beef animals an attempt being made to keep each side grazed equally close.

Results

The per acre gains for the three years were as follows:

	Fertilized	Unfertilized
1932 (Dry)	130.28 lbs.	128.16 lbs.
1933	550.00 "	330.00 "
1934	351.12 "	310.70 "
Totals	1031.40 "	768.86 "

The difference in favor of the fertilized plat was 262.54 pounds. The total cost of the fertilizer per acre for the three years was $14.50. The necessary selling price of grass fat cattle in order to break even would, therefore, be 5.53 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, at this time, May 1935, the growth on the fertilized plat is very markedly superior to that on the unfertilized area.

5. Value of Reeds (Arundinaria Tecta) For Grazing Cattle

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 593.21 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 131.78 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 about November 1st, the dry cows may be carried on reeds until about February 1st.

6. Reeds versus Tame Pasture for Summer Grazing

In order to compare reeds with Blue Grass for summer grazing records of gains ~~on yearlings~~ on yearlings were kept during the season of 1934.

The tame pasture was grazed from April 20 to October 26, or 189 days, during which time they gained an average of 1.18 pounds per head per day.

The reed pasture was grazed from May 8 to October 26 during which 171 day period they made average daily gains of .81 pounds.

It was necessary, due to drought, to move both groups of cattle and for that reason no definite comparison can be made. However, as has been shown, the tame pasture was ready to graze 18 days earlier than the reeds. The reeds on the other hand, after May 8 furnished more grazing per acre than the tame pasture and they were injured less by the dry weather.

This work will be continued for a period of years when no doubt some definite conclusion can be drawn.

Additional Activities

In addition to the foregoing more or less definite tests, much time and effort has been expended along strictly extension lines as outlined below.

Beef Cattle

Selection of herd bulls, females, and feeder cattle.

Advise regarding breeding, feeding, and management problems.

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

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

Method demonstrations in dehorning and castrating.

Culling of herds.

Control of parasites and diseases.

Marketing.

Sheep

Selection of rams and ewes.

Feeding and managerial problems.

Docking and castrating demonstrations.

Stomach worm treatment demonstrations.

Demonstrations in shearing and proper handling of the wool.

Marketing

Work Stock

Selection of stallions, jacks, and mares.

Feeding and management problems.

General

Pasture establishment and management.

Annual pastures for supplementary grazing.

Judging demonstrations.

Judging at Fairs.

Killing, cutting, curing and canning demonstrations with cattle, sheep and hogs.

Work Now Under Way

Cost Data on Maintaining Beef Herd, and Producing Calves and Yearlings in the Reed Areas.

Value of Crop Gleainings for Wintering Beef Cattle.

Steering and Hogging Down Corn and Velvet Beans.

Value of Manure in Peach Orchards.

Vitamin A Studies With Beef Cattle.

Demonstration of the Value of Baby Beef Production Thru 4-H Club Work.

Value of Shropshire and Hampshire Rams in Up-Grading Native Sheep.

A Study of The Relation of Rate of Growth in Hogs, When Controlled By Level of Feeding, To The Production, Quality, and Palatability of Their Meat.

A Study of the Influence on Firmness of Chilled Carcasses and Fat from Pigs Fed Rations Containing Varying Amounts of Ground Soy Beans, Followed by a Corn Ration Containing 13% of Cotton-Seed Meal.

Protein Supplements for Fattening Pigs.

Cottonseed Meal as a Factor in Improving Firmness of Carcasses of Pigs that Have Been Previously Fed Peanuts.

Vitamin A Deficiency in Practical Swine Rations.

Hogging Off Crops as an Aid in Soil Improvement.

Methods of Establishing Permanent Tame Pasture on Blackland Soils.

Determining Carrying Capacities of Permanent Pastures of Various Kinds.

Practical Methods of Improving Permanent Pastures.

Value of Reeds (Arundinaria tecta) for Grazing Beef Cattle.

Reeds versus Tame Pasture for Summer Grazing.

Reeds for Winter Grazing.

Additional Work Recommended For The Future.

Utilization of Maximum Amounts of Roughage for Finishing Beef Cattle.

Proper Age at which to Finish Cattle for Market.

Determining Areas in Which Cattle Sould be Sold as Feeders or as Slaughter Cattle.

Feeding Value of Hay Cut at Varying Stages of Growth.

Methods of Controlling or Eradicating the Nodular Worm in Sheep.

Development of the Early Lambing Character Thru Selection or Breeding.

Value of Purebred Mutton Type Rams Used on Native Ewe Flock Under Natural Environment in Eastern North Carolina.

STATISTICAL REPORT

COUNTY	Days Spent	Beef Bulls Placed	High Grade or Purebred Females Placed	Rams Placed	High Grade or Purebred Ewes Placed	County Beef Cattle Improvement Associations Formed	Four H Club Members Completing Projects		
							Beef Cattle	Sheep	Swine
Alamance	2								6
Alexander									
Alleghany	2	7	3	11					
Anson	1	2	2	2	2			4	8
Ashe	1								
Avery		4		2	1				
Beaufort	3	1							
Bertie	3								8
Bladen									6
Brunswick	1	2		1					
Buncombe	4	2		2					
Burke									
Cabarrus		2		2					
Caldwell									32
Camden	1								
Carteret									30
Caswell									30
Catawba									
Chatham	2	1	3	2	3				6
Cherokee		3		2			1	2	9
Chowan	4	2	10	1	2				2
Clay	3	2	3	3	2	1	14	1	19
Cleveland		1							20
Cumberland	3	1		2					32
Craven	1								9
Currituck	6	2							
Dare									
Davie	2			1					
Davidson									2
Duplin		2	2						36
Durham	1	1	1	1	1				52
Edgecombe	2	3	2						35
Forsyth	2			2	1			4	1
Franklin	1	1	25						
Gaston									12
Gates									
Graham									
Granville	2								
Green									
Guilford				1	3				6
Halifax (Britt)	3	2		2					1
Halifax (Davis)				2					
Harnett		2							5
Haywood	3	25	3	20	2		2		6
Henderson									4
Hertford									

Hoke	2								
Hyde									
Iredell	1								10
Jackson	2	2		8	1		7		8
Johnston	2								12
Jones	11	2					1		
Lee									10
Lenoir	6	5	5	1					22
Lincoln		2							2
Macon	1	2	1	5					14
McDowell	1								
Madison	7	12	2	1		1			
Martin		2	2	3	3				12
Mecklenburg		1	1	1				6	
Mitchell and)									
Yancey)		10	2	11			3		6
Montgomery				4	2			9	22
Moore	1								6
Nash									
New Hanover	1								
Northhampton									
Onslow	6								
Orange									10
Pamlico	2	1							6
Pasquotank	4	2	6	2					40
Pender	1	1	2						40
Perquimans	1								
Person		1							
Pitt		2	35						
Polk									
Randolph			1						4
Robeson	4								45
Richmond	4								
Rockingham									1
Rowan	1	1	3	2	4				
Rutherford									
Sampson									
Scotland	4	1							
Stanley									69
Surry									20
Swain									
Stokes									
Transylvania									
Tyrrell		1		5	4				12
Union									
Vance									39
Wake	5								
Warren									
Washington	6	3		3	4				35
Watauga									
Wayne	2	1	1	1					
Wilson		1	3	2	3				74
Yadkin									
Yancey - See Mitchell									
Totals	128	121	116	108	38	2	28	26	896

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