N O R T H C A R O L I N A

AGRICULTURAL EXTENSION SERVICE

A N N U A L R E P O R T

Complete copy

for

1955.

Period covered: December 1, 1954 to November 30 1955.

Name of Project: DAIRY EXTENSION

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Percentage of time devoted to project: _____

Date Submitted: _____, 195__. Signed: _____
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Date Approved: _____, 195__. Signed: _____
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PERSONNEL OF DAIRY EXTENSION SECTION

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Blalock, T. C.	Dairy Cattle Breeding	Entire State
~~Farnham, F. R.~~ (Retired May 31, 1956)	~~Production~~	~~Western Section~~
George, J. D.	Junior Dairy Program	Entire State
Redfern, R. B.	Dairy Manufacturing	Entire State
Rich, R. R.	Production	Southeastern Section
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Senger, Marvin E.	Production Testing	Entire State
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Dr. Feeding and Management - Entire State
Started June 1, 1956

INTRODUCTION

The major problems outlined in the 1955 Plan of Work to be worked on in developing an adequate and profitable dairy industry in North Carolina were:

1. A lack of both quantity and quality roughage.
2. Small farms inadequately mechanized.
3. Adequately trained help is lacking.
4. Lack of available credit.
5. A widely scattered cow population in many areas.
6. Lack of veterinarians and therefore maintenance of herd health and sanitation.
7. Use of poor quality sires in many instances that pass on a low level of milk production inheritance (4520 lbs. of milk yearly-state average).
8. Considerable poor quality milk is produced in the spring and fall months. This ammounted to more than a $300,000 loss to dairymen in rejected milk during 1954.
9. A unified and coordinated state-wide marketing program is lacking.
10. A lack of facilities for handling surplus milk.

The major portion of the time of the Dairy Extension Specialists during 1955 was devoted to the following six projects which embrace the ten major problems listed above.

1. Dairy Cattle Breeding
2. Dairy Feeding, Management, and Herd Health
   a. Production Testing
3. Junior Dairy Program
4. Cooperation with other organizations and Agencies
5. Dairy Marketing
6. Dairy Manufacturing

During 1955 the Specialists assisted with the Farm and Home Development program wherever help was requested. Work on this project will increase in the coming year as more and more families are enrolled in the program and specialists are needed for consultation.

1955 RESULTS OR ACCOMPLISHMENTS

The year 1955 saw the end of the drought cycle in North Carolina. Crops were excellent throughout the state until the disastrous hurricanes in August greatly reduced crop yields in the Eastern counties. Except for Eastern Carolina, dairymen were better off feed-wise the last six months of 1955 than for several previous years. Several of the Eastern counties have been designated hurricane disaster counties, and will receive some Federal aid.

Fluid milk production was leveled out somewhat during 1955 with less surplus being produced in the spring and a greater volume in the fall. Sales of fluid milk and cream were up about 8.5% during the first nine months of 1955 over 1954, while production was up only 3% during the same time. This fact has meant that producers selling grade A milk have realized about 12¢ per cwt. more for milk sold in 1955 than for 1954.

The number of Grade A dairymen increased from 4599 in September of 1952 to 4906 in September of 1953 and 5222 in September of 1954, however, there was a decrease to 5039 in September of 1955. This was the first decrease in many years, however, milk production is well above the 1954 level as herd size has increased and efficiency per herd has been improved.

The number of producers as well as total production of manufacturing milk declined in 1955. The amount of decline was considerable and is an alarming situation for the entire industry.

Progress was made on most of the Dairy Extension Projects in 1955. There was a continued and an increased interest in 4-H Dairy Club Work. The number of cows on production test showed another increase over the previous year, both on owner sampler and DHIA. The number of cows bred artificially lagged behind 1954 during the first half of 1955, but tremendous increases were shown during the latter half of the year so that the total bred in 1955 will exceed 1954. This reflects somewhat the desire of dairymen to produce more fall milk which is most desirable from a marketing standpoint.

It was heartening to see the great number of silos constructed during 1955. County Agents reported construction of trench, bunker, and uprights in large numbers. The educational emphasis that has been placed on improved roughage throughout the state is having its effect on the supply of hay, pasture and silage. This is particularly true with respect to silos which are being erected in ever increasing numbers.

Considerable time in 1955 was spent with producers, county agents, dairy plant fieldmen and processing plants on quality problems. The processing plants are demanding a higher quality product than a few years ago and so is the consumer, thus there are many problems to be handled in this area.

Specific details of results and accomplishments are given in the following narrative covering each project worked on during 1955.

Project I - DAIRY CATTLE BREEDING

As progress is made in feeding and management it becomes more and more important that improvement also be made in our breeding program. Once levels of feeding and management catch up with the genetic level

of a herd further improvement is impossible until this genetic ceiling has been raised. T. C. Blalock, leader of this project spent approximately 80 per cent of his time supervising a state wide breeding program that includes an extensive artificial breeding program using desirably proved sires.

Details of Operation

One major change occurred in the operation of the Artificial Breeding program during 1955. On May 1 the Forsyth County stud discontinued operation of their stud and began purchasing semen from the American Breeders Service stud at Carmel, Indiana who now supply all of the commercial service in this state. This was the first organized association in the state and had been in operation continuously since 1946. It is felt that this decision was to the advantage of the farmers in Forsyth County since the small number of cows being bred made it impossible to maintain a stud of top quality bulls.

As of December 1, 1955 there were fifty-eight active associations employing a total of seventy-one technicians who were receiving daily shipments of semen from the American Breeders Service stud at Carmel, Indiana. No major changes in the operation of this phase of the program have occurred this year.

Each of the fifty-eight associations receive daily shipments of Guernsey, Holstein and Jersey semen. Fourteen counties also receive semen from Brown Swiss bulls located at this stud. They are: Alleghany, Ashe, Buncombe, Cabarrus, Forsyth, Guilford, Haywood, Henderson, Iredell, Macon, McDowell, Mecklenburg, Rockingham, Union, and Wake. Interest in this breed is increasing, especially in the mountain counties of this state. It is felt that the fact that the services of outstanding bulls

are being made available is largely responsible for this increased interest. In addition the following thirty associations are receiving Angus semen: Alamance, Alleghany, Ashe, Buncombe, Cabarrus, Caldwell, Catawba, Coastal, Davidson, Durham, Forcyth, Gaston, Guilford, Harnett, Haywood, Henderson, Iredell, Lenoir, Lincoln, Mecklenburg, Orange, Randolph, Rockingham, Rowan, Rutherford, Stokes, Union, Wake, Wayne and Wilkes. While this does not contribute to the improvement of dairy cattle breeding it does increase the total number of services thereby enabling us to maintain higher caliber men as technicians and in many cases it does provide a real service to the owners of family cows or small beef herds.

The following seventeen associations continue to receive Ayrshire semen from the Central Ohio Breeding Association at Columbus, Ohio: Alamance, Avery, Catawba, Eastern, Haywood, Henderson, Iredell, Mecklenburg, Orange, Moore, Rockingham, Rowan, Stanly, Wake, Wayne, and Yadkin. This phase of the program is still supported financially by the North Carolina Ayrshire Breeders Association and resulted in 465 cows being bred to Ayrshire bulls in 1955.

The State Institutional Breeding program continues to supply semen for eleven State Institutional herds. T. C. Blalock serves as a member of the bull selection committee and during the year considerable assistance was given to this group. The progress shown in the table below is a striking example of the progress that can be made through improvements in breeding, feeding and management. All records are on a 305 day, 2X, M.E. basis.

Table I

Year	Milk	%	Fat
1949	10,558	3.47	366
1950	11,020	3.48	384
1951	11,238	3.49	392
1952	11,741	3.43	403
1953	12,428	3.47	431
1954	13,083	3.52	459

Short Courses

During 1955 it was necessary to hold only one training course in the technique of artificial insemination. This was partially due to the fact that there were fewer technician changes plus the fact that we were often able to fill vacancies with experienced technicians. Twenty-two men completed this training course making a total of approximately 475 men who have received their training at this institution since 1947. In addition, due to emergency situations, nine men were either brought into the college or received in the field two days of intensive instruction in this technique.

Educational Methods

Individual dairymen, technicians and county agents must be frequently contacted and kept informed if the maximum progress is to be made in the breeding program. Following are some of the educational methods used to accomplish this in 1955:

1. Meetings. A member of this office was present at the annual meeting of thirty of our artificial breeding associations. Not only were principles of breeding discussed but other related dairy subjects were included on many of the programs. We have attempted to use these annual meetings more extensively as an educational media. In addition assistance was given at twenty-three other meetings in leading discussions on breeding. A number of the artificial breeding associations have held promotional meetings throughout their county where prospective customers have been invited in for a complimentary dinner followed by a discussion of the program. These have proven to be a successful way of furthering the program. This and many other promotional activities have been made possible by a participating advertising plan initiated by the stud this

year. Under this program the stud agrees to pay half the cost of any promotional activity sponsored by the local group up to an amount equal to 5¢ for each first service cow bred during the previous year.

2. Mass Media. Six television shows and three radio programs over the statewide network were presented. Four of the television programs were over the college station. In addition several agents were assisted with local radio and TV programs. Thirteen news articles were prepared and released for use by newspapers, radio and television stations.

3. Display Material. An exhibit entitled "Better Cattle For Better Living through Artificial Breeding" was prepared and placed on display in the dairy cattle barn at the North Carolina State Fair. The exhibit shows actual examples of herd improvement through breeding and relates this progress to what it means in terms of standards of living. The exhibit was constructed so that during the coming year it can conveniently be loaned out for use at local county gatherings.

4. Individual Herds. During the year four individual herds were assisted in initiating a program of artificial breeding within their own herd. This program was adopted by the owner either for purposes of disease control or to extend further the use of a valuable individual bull. In one of the herds where vibriosis had plagued them for two years breeding efficiency has now returned to normal.

5. Publications. One of our major problems in breeding efficiency and herd management is a lack of sufficient records. A new Breeding and Calving Chart was prepared and has been readily accepted. If we could educate our dairymen to make proper use of this one record form alone it could easily increase the income from our dairy industry by well over $1,000,000 annually.

6. Technician Conferences. To be more effective in their work technicians must be kept informed of the latest developments in their field. We have found that district and state meetings where this material can be presented and technicians have an opportunity to mingle with each other and exchange ideas have been very effective. Since 1951 we had not attempted to hold a state wide technician meeting. In April of this year another one was scheduled and over 100 people attended. The main theme of the program was how we could increase the number of cows being bred. Evidence of the success of this program can be seen in the fact that seven of the eight months since this meeting have shown increases in the number being bred. A copy of the program can be found at the end of this section.

Following the statewide conference and just preceding the fall breeding season a series of seven district technician meetings were held. Recent bull changes were discussed and several new promotional ideas were presented. Details of a proposed technicians contest were also discussed. These meetings were a follow-up on the state conference and again proved quite effective.

7. Technicians Contest. Oftentimes just a little incentive of the right kind at the right time can produce excellent results. In this years technicians contest it was felt that more interest would be stimulated if the awards were in the form of merchandise instead of cash and were something that would interest the wife as well as the husband. Ten prizes were offered all donated by American Breeders Service. The first prize winner will have his choice of either a three piece mink scarf or a 17 jewel wrist watch. Winners will be picked on the basis of increased business and new customers added. Since the contest period was October through December the winner has not yet been determined, however the large increase in first services in the first two months is an indication that some enthusiasm has been generated.

Winner of last years contest "Trading Hamburger for Steak" was Dan Morris from Catawba County. This contest was actually a part of a national contest sponsored by American Breeders Service. As state winner Mr. Morris was nominated for the national award and won third place in competition with technicians in thirty-seven other states. This received favorable publicity in the press and served as a boost for the program.

8. Technician Recognition. Another technician was initiated into the exclusive "10,000 Cow Club"---a group now consisting of just two technicians who have all artificially bred at least 10,000 first service cows in North Carolina. The award was made this year to Jesse Campbell of the Alamance Association at the annual Dairymen's Conference. The other member of the club who was in 1954 is Joe Wells of the Buncombe Association. This award is something the technicians look forward to and provides favorable recognition for the program.

9. Newsletter. Four issues of "The AB News" were published with approximately 1500 copies being distributed. Timely articles are included and an up to date summary of breeding results are published. Each county is ranked on the basis of their increase or decrease in number of first services and serves as a reminder to all concerned of the status of the program in their county. In addition to technicians and county agents, many dairy plant fieldmen and milk sanitarians are also on the mailing list. One technician orders enough copies to mail to each dairyman in his county.

10. Proved Sire Heifer Sales. Three sales were held during 1955. The following story illustrates how these sales have been used as an educational method:

"Heifer Sales Prove Profitable 3 copies
To Both Buyers and Sellers"

"Each year many North Carolina dairymen find it necessary to purchase

cattle as replacements or additions to their milking herds. Since there usually was no readily available source within the state this meant a trip to one of our northern states. All too often though these purchased cattle not only proved to be unprofitable producers but resulted in brucellosis or some other infectious disease being introduced into a heretofore clean herd. In a rapidly growing dairy industry such as ours a reliable source of sound, clean cattle is important if it is to continue to grow.

At the same time these men were in need of herd replacements there were other local dairymen who if an organized outlet could be obtained were in a position to supply these animals. These were our older, established dairymen who could divert some of their surplus feed and time into growing out a few extra heifers and give them an opportunity to add important dollars to their farm income.

This problem was discussed by the county agents and dairy specialist at the annual meetings of several of the artificial breeding associations in 1954. As a result of the interest shown it was decided to call an area wide meeting of Extension personnel, farmers and technicians. Because of the tremendous amount of interest that was shown it was decided that the various artificial breeding associations would sponsor two Proved Sire Bred Heifer sales. A steering committee was appointed and each county was asked to appoint a committee to be responsible for locating animals within their county.

To assure that only top quality animals were offered for sale the committee adopted a very strict set of rules and regulations. Only animals that were a result of artificial breeding to desirably proved sires and were from disease free herds would be accepted. They must be of acceptable type and since the heavy demand would be for fall fresheners, it was decided to confine the sales to heifers that would freshen early during the fall base setting months.

As this was a new venture for most of the dairymen contacted they were somewhat skeptical and it was only after much persuasion by the county agents that 78 animals were finally secured for the first two sales in August of 1954. These animals brought a total of $18,720 for an average of $240 per head. Following this success, many more farmers saw the advantages these sales offered. In fact interest grew to the point where it was necessary to plan a third sale for 1955. A total of 171 head consigned by 110 different farmers were sold this year for $43,605 or an average of $255 per head.

The sales have served many purposes. First and foremost they have in these two years provided 68 different North Carolina dairymen with 165 head of sound dairy herd replacements--replacements that would otherwise have probably been bought outside of the state at higher prices but poorer in quality. Typical of the dairymen who have purchased cattle at these sales is C. T. Lecka of Avery County who will attest to the quality of the animals. The four he bought at the 1954 sales each produced over 10,000 pounds of milk in her herd with one going over 12,000 pounds. He returned in 1955 to purchase three more replacements. Joe McKennon, a Buncombe County Dairyman, who needed to enlarge his herd took advantage of this opportunity of buying at home and became this year's heaviest North Carolina buyer by purchasing 13 animals.

While the primary purpose of the sales was to supply local dairymen with needed replacements the sales have gained recognition in other states. Buyers from three other states purchased 32 of 78 animals offered for sale the first year. The sales this year attracted buyers from six different states who purchased a total of 52 animals.

A second thing accomplished by these sales has been that they have provided many farmers with an additional source of income. Frank Burgin, a Henderson County dairyman, is one who has certainly taken advantage of this opportunity. Mr. Burgin normally milks about 50 cows and in 1954 he was able to consign four animals that sold for a total of $1,255. Due to a heavy run of heifers he consigned 12 to this year's sales and as a result added $3,565 to his 1955 farm income. However, dairymen are not the only consignors. Wallace Bacon, an Orange County poultry farmer also saw in these sales a chance to increase his farm income and put into practice his earlier dairy 4-H Club training. Mr. Bacon purchases artificial heifers from local dairymen and raises them out for these sales. In 1954 his two animals brought $560. This year he again had two heifers to sell with one of them topping all the sales at $500. Added to the $270 he received for the other heifer, Mr. Bacon took hom $770 to add to his 1955 farm income.

The consignors are for the most part men who have never before consigned an animal to a public auction sale. To be admitted the animals had to be properly fitted and halter broken. As a result most of these consigning to the sales have acquired a new skill. At this year's sales awards were made to the best fitted animal. At two out of the three sales, 4-H Club boys won the award, again demonstrating the excellent training they are receiving. The value of properly growing out heifers has also been very effectively demonstrated at these sales. One dairyman who consigned four animals to the first sale that sold for an average of $216 came back to the 1955 sales with two well grown properly conditioned heifers that brought an average of $340. He admits athat this has clearly shown him a lesson in raising heifers. These sales are truly an example of Extension recognizing a basic need of farm people, taking action to solve this problem and using the results as a means of teaching other farmers these improved practices."

Progress and Results

1. Number of Services. After a decrease in 1954 the number of first services for 1955 again showed an increase but failed to quite reach the all time high of 1953. The important thing is that we were able to reverse the downward trend and it is significant to note that as of December 1, 1955 of the 58 active associations 38 were showing an increase over the previous year. 1956 should prove to be a fruitful year for the artificial breeding program in North Carolina. This is more optimism and enthusiasm among technicians, agents and farmers than we have had in several years.

One of our major problems has been an unstable marketing situation in two of our largest milk sheds representing almost 25 per cent of our Grade A producers. We feel these situations are greatly improved. How-

ever, since a breeding program is a long range project many farmers who have felt insecure or were undecided about their future in dairying have neglected their breeding program feeling it would not be important if they were to disperse their herd. Lower milk prices in some areas and the resulting cost-price squeeze have also taken their toll. I believe though we now have the understanding necessary among technicians, agents and dairymen to make them realize that times like these are when every improved practice becomes more important than ever before.

The figures quoted below in Table II for 1955 are actually based on a twelve month period ending December 1, 1955. During the corresponding period of the previous year 45,165 cows were bred. If the increase that is anticipated in December 1955 comes about the calendar year of 1955 will surpass the alltime high of 1953.

Table II

Year	No. of Assns.	No. of Counties Served	No. of Cows Bred	60-90 Day non Return	% of Cows Bred Artificially
1946	1	1	663	-	0.2
1947	3	3	1,050	-	0.2
1948	34	39	16,073	56.5	5.0
1949	50	55	27,531	59.0	6.6
1950	56	63	34,424	65.0	9.6
1951	63	75	42,421	66.0	12.7
1952	65	81	43,843	61.7	13.1
1953	65	74	46,623	65.3	13.8
1954	61	72	45,368	68.4	13.5
1955	58	70	46,171*	69.3**	13.7

*Covers from December 1954 - November 1955
**January through September 1955 only

2. Organizations. For the second straight year no new county artificial breeding units were formed. Due to the discontinuing of operation by three organizations we had a net loss from 61 associations in 1954 to 58 in 1955. Lack of volume and as a result being unable to attract and maintain a competent technician was responsible for their failure. The combined services of the three only accounted for 493 first services. In two of these counties the cow population is sufficiently large to support at least a part-time program but so far have been unsuccessful in locating the right technician. Following are the associations that discontinued operation in 1955:

Name of Association	Date Discontinued
Anson Breeders Cooperative, Inc.	April 1, 1955
Mitchell Breeders Cooperative, Inc.	May 1, 1955
Northampton Breeders Cooperative, Inc.	January 1, 1955

3. Fall Freshening and Breeding Efficiency. Effective this year the North Carolina Milk Commission shortened the base period by removing the months of January and February. The base now is built in September through December. An indication that farmers are adjusting their breeding program is shown by the fact that the heavy surge of fall breeding this year began in October instead of November as in the past. During November a total of 7,716 cows were bred exceeding the previous high month by almost 1500 cows. Projecting the figures for December shows that 12 per cent more cows were bred during October, November, and December of this year than during the same period in 1954. Approximately 41 per cent of the total number of cows bred for the year were bred in October, November and December. In 1950 only a few over a third of the total breedings occurred during this period which shows that our dairymen are becoming more conscious of a fall freshening program.

Table III

Month	Number Services	60-90 Day Non-returns
December, 1954	5,250	67
January, 1955	4,293	67
February	3,485	69
March	3,196	69
April	2,717	67
May	2,921	71
June	2,733	72
July	2,423	72
August	2,562	69
September	3,274	70
October	5,601	Not Available
November	7,716	Not Available
	46,171	69.3

As can be seen from Table III conception rate reached an all time high. Since March the average has been slightly above 70 per cent. Farmers are realizing more and more the extremely important part they have to play in achieving a good conception rate. The average technician has been on the job longer now than ever before and in many instances this year when replacements became necessary we were able to make them with equally experienced men.

4. DHIA Survey. To determine the extent our DHIA members were using the artificial breeding program a survey was conducted by the testers. The summary listed below is an indication of what our most progressive group of dairymen think of the program and has been valuable information in farm meetings.

A. Uses artificial breeding exclusively 31 %

B. Breeds most cows artificially 18 %

C. Breeds a few cows artificially 26 %

75 %

D. Felt their conception rate had been:

Very good 15 %

Good 53 %

Fair 23 %

Poor 8 %

E. Of those reporting daughters in milk when compared to their dams they felt they had been:

Better 55 %

As Good 40 %

Poorer 5 %

5. Progeny Performance. Additional records became available during 1955 on the progeny from artificial breeding. These statistice have been used very effectively in furthering the use of this program. Following are the averages:

Guernseys

	Lbs. Milk	%	Lbs. Fat
188 daughters, ave.	7,578	4.80	364
57 daughters, ave.	7,730	4.85	375
57 dams, ave.	7,648	4.72	361
Difference	+82	+.13	+14

Holsteins

	Lbs. Milk	%	Lbs. Fat
780 daughters, ave.	11,308	3.63	410
375 daughters, ave.	11,605	3.58	415
375 dams, ave.	11,137	3.49	389
Difference	+468	+.09	+26

Jerseys

	Lbs. Milk	%	Lbs. Fat
183 daughters, ave.	7,711	4.97	383
77 daughters, ave.	7,680	5.09	391
77 dams, ave.	7,473	4.98	372
Difference	+207	+.11	+19

All Breeds

	Lbs. Milk	%	Lbs. Fat
1151 daughters, ave.	10,127	3.93	398
509 daughters, ave.	10,578	3.85	407
509 dams, ave.	10,192	3.76	383
Difference	+376	+.09	+24

In addition to the above state summary the data have been broken down by counties where numbers are large enough to be significant. As this is information close at home it is quite effective in county meetings. The following table is a summary of the production data for Guilford County:

Guilford County (25 Herds)

	Lbs. Milk	%	Lbs. Fat
134 daughters, ave.	10,991	3.81	419
85 daughters, ave.	11,390	3.78	431
85 dams, ave.	10,566	3.70	391
Difference	+824	+.08	+40

6. List of Associations. Following is a list of all associations that operated between December 1, 1954 and November 30, 1955, the number

of cows bred, the percentage increase or decrease over the previous year and the percentage of cows in the area bred artificially:

Association	No. of Cows Bred	Percentage Increase or Decrease	% of Cows in Area Bred
Alamance	2,049	+5.5	29.6
Alexander	833	-10.8	21.8
Alleghany	452	+ 8.1	5.4
Anson	89	- -	- -
Ashe	602	+18.0	4.8
Avery	87	+26.1	2.6
Buncombe	2,753	- 0.8	23.4
Cabarrus	314	-20.7	5.6
Caldwell	935	+22.5	24.5
Caswell	322	-15.5	8.2
Catawba	1,754	+12.9	21.8
Chatham	452	+ 2.0	6.4
Cleveland	928	+14.6	11.0
Coastal	799	- 6.2	16.1
Columbus-Bladen	300	- 1.6	5.3
Cumberland	342	- 3.1	13.4
Davidson	972	+ 4.4	11.9
Davie	892	- 4.9	15.7
Durham	193	- 7.7	8.7
Eastern	482	- 8.2	15.2
Forsyth	1,951	- 2.1	39.3
Gaston	817	+29.5	14.0
Granville	147	-53.5	3.3
Guilford	2,345	- 0.9	25.9
Halifax	220	+43.8	8.5

Association	No. of Cows Bred	Percentage Increase or Decrease	% of Cows in Area Bred
Harnett	76	-28.3	2.8
Haywood	1,092	+ 3.7	13.2
Henderson	1,717	+ 4.8	32.3
Iredell	2,119	+30.7	16.1
Lenoir	277	+31.9	10.9
Lincoln	1,425	+12.2	20.8
Macon	722	-19.1	17.2
Mecklenburg	1,150	+ 0.4	13.6
Mitchell	48	- -	- -
Moore	365	+20.9	14.4
Murphy	255	-54.7	5.1
McDowell	285	+20.8	14.0
Northampton	16	- -	- -
Orange	973	+ 9.4	18.5
Person	138	+42.2	3.5
Pitt	285	- 2.4	13.4
Randolph	1,193	+12.4	13.8
Richmond	156	-37.6	9.8
Robeson	568	+26.5	11.8
Rockingham	944	- 5.3	17.6
Rowan	1,057	+17.1	11.1
Rutherford	683	- 4.6	13.9
Sampson	157	-27.3	3.5
Stanly	854	+ 2.6	19.1
Stokes	375	+ 8.4	7.0
Surry	538	- 1.0	7.2

Association	No. of Cows Bred	Percentage Increase or Decrease	% of Cows in Area Bred
Transylvania	299	+ 7.2	17.0
Twin	312	+44.4	6.5
Union	1,167	-11.4	11.7
Vance-Warren	908	+17.5	13.1
Wake	1,334	+ 3.7	19.9
Watauga	229	-10.9	3.3
Wayne	544	-12.0	15.5
Wilkes	371	-16.1	3.4
Yadkin	1,105	+ 1.7	17.2
Yancey	322	+40.0	6.7

PROJECT II - DAIRY FEEDING, MANAGEMENT AND HERD HEALTH

The Agronomy, Farm Management, Agricultural Engineering, and Entomology Sections cooperate very closely in this phase of the project.

During 1955 fifty-five county-wide dairy schools were held cooperatively with the Agronomy and Agricultural Economics Departments. Many of these were joint schools with negroes. Approximately 1800 dairymen and agricultural leaders attended these schools. The dairy specialist stressed milk quality, raising replacements and better feeding of cows while the Agronomy Department stressed the importance of a sound and adequate feed production program. The milk marketing specialist brought dairymen up to date on marketing problems.

One state-wide dairyman's conference was held at Raleigh in February. About 420 dairymen and agricultural leaders from every area of North Carolina participated in this conference. Herd health, feeding, management and the need for producing quality dairy products were the main points stressed. A similar type conference was held at the A. & T. College for negro dairymen and leaders.

Fly control demonstrations were held in 35 dairy barns in 20 counties. The Entomology Department, County Agents, County Milk Sanitarians, milk plant fieldmen, commercial manufacturers and vocational agriculture teachers cooperated. Approximately 1100 dairymen and agricultural leaders attended these meetings.

During the summer months the dairy specialist working with those in Agricultural Engineering, Farm Management and Agronomy conducted 15 county summer field days or tours. Each of these were attended by 100-150 agricultural leaders and dairymen.

The expansion in silo contrustion continued throughout the state. Nearly every county reported an increase in numbers of silos constructed.

More and more dairymen are using silage in increasing amounts.

The dairy specialist cooperating with Agricultural Engineering specialists have developed a number of plans for milking, lounging, calf, bull barns, and silos. During 1955, 4645 of these plans were mailed out on request to farmers and county agents. Among these plans were 385 for milking parlors, 862 for pole or lounging barns, 425 for six-cow stanchion and 311 for twelve-cow stanchion barn plans, used for milking only. In addition the Agricultural Engineering specialist and the dairy specialist reviewed all the plans now available, reworking and remodeling certain ones in the light of new research and findings in the field.

During 1954 fifteen unit demonstration dairy farms were selected in the western district of North Carolina. Farm plans were drawn up for each farm at that time. These farms were revisited in 1955 and five more were included in the program. This is a joint program with dairy, farm management and agronomy cooperating. Results and accomplishments will be measured from year to year. By following recommended practices several of the dairymen have made sizable increases in milk production per cow and have greatly improved their feed production program.

Each of the approximately 500 farms on which DHIA testing is being conducted in North Carolina is a demonstration in farm management and roughage production. For details see section on Production Testing.

During the year the dairy specialist has encouraged milk plants to work closer with producers on problems affecting both producers and processors. Several meetings have been called as a result of this activity which the dairy specialist participated in. Subjects that were stressed were controlling off flavors in milk, the base setting period, and greater fall milk production. There were 10 of these meetings attended by approxi-

mately 100 dairymen.

The dairy specialist has worked close with state and local veterinarians in promoting a more comprehensive herd health program. He spoke to a short course for veterinarians. Every effort is being made to acquaint dairymen with the facilities and uses of the new Animal Disease Diagnostic Laboratory on the North Carolina State campus. Specific assistance has been given many dairymen on herd health problems. The state legislature turned down the request for the hiring of a full time extension veterinarian to work on herd health problems. However this request will be renewed when the legislature convenes again early in 1957.

During 1955 many news releases, articles, television shows and radio programs have been prepared on this phase of the project. See statisical report. Now that the college has both a daily radio and television show going to farm people through their own facilities, programs of this kind have become more numerous.

Literature and exhibits prepared during 1955 specifically related to this project are listed below:

What's In The Bag

Check your Herd Management Program

Corn Shucks As a Roughage For Lactating Dairy Cows

Silage From Pasture and Hay Crops (Revised)

Flip Charts on Dairy Herd Management

Things to Consider In Culling The Dairy Herd

A Guide To Better Dairying (Revised)

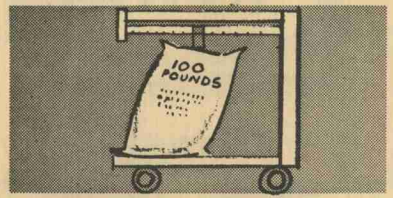
An Exhibit on Dairy Barn Layout

Exhibit I

What's in the Bag

What The Label Tells You

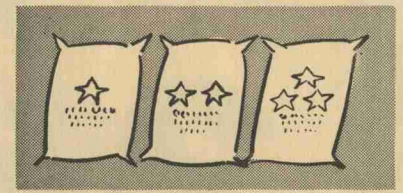
FIRST, it gives the weight of the feed. Low–priced feed does not necessarily mean economy in milk production. What you pay for total digestible nutrients, or digestible protein, determines your best buy.



What will this 100 pounds of feed do?

SECOND, the label tells you who prepared the feed in the bag.

THIRD, it gives the manufacturer's ident–ification of the feed. He often has several trade brands that vary in quality and price. Find out the difference between the grades and select the one best suited for your use.



Manufacturers prepare different quality feeds.

FOURTH, the label carries a list of in–gredients in the bag. Most feeds do not give the amount of each ingredient, and are known as "closed formula" feeds.

Variety has some value in dairy feeds, but the feed with the greatest number of ingredients is not necessarily the best. Look over the list of ingredients and decide whether they are good dairy cattle feeds and if they are necessary.

FIFTH, it gives a guarantee that the con–tents are pure and unadulterated. However, this guarantee does not tell you the quality of the ingredients used in the feed.

SIXTH, the label includes a chemical analysis of the feed. This gives the ***minimum*** percentage of crude protein, crude fat, and may include nitrogen–free extract (carbohydrates). It also gives the ***maximum*** percentage of crude fiber.

This is a good index to the nutritive value of the feed if recognized ingredients of high quality are used. The analysis is a good guide to what's in the bag but it does not tell how much the cow will be able to get from the feed.

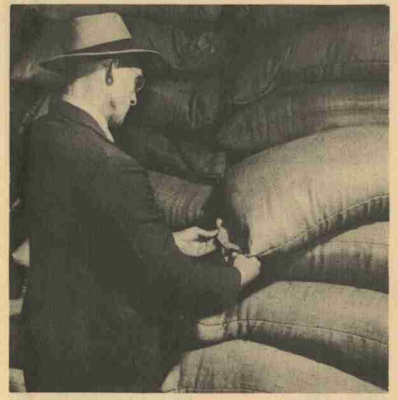
What The Terms Mean

NITROGEN–FREE EXTRACT is the part of the carbohydrates that is more digestible, or what the cow can actually use.

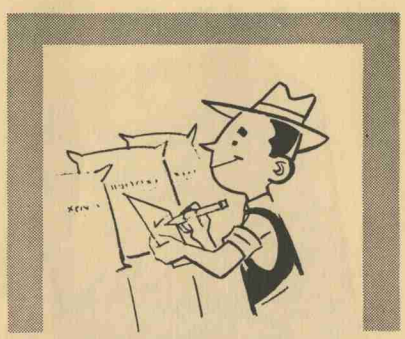
CRUDE FIBER is the part of the carbohy–drates that digests poorly and is less usable. It's the less desirable portion.

CRUDE FAT is a concentrated source of energy. One pound has about 2½ times as much energy as equal weights of proteins or car–bohydrates.

CRUDE PROTEIN is the total amount of protein. Digestible or usable protein will be about 80 per cent of the crude protein.



Good dairy feeds will contain good ingredients.



Choose the feed best suited for your needs.

How To Select The Best Feed

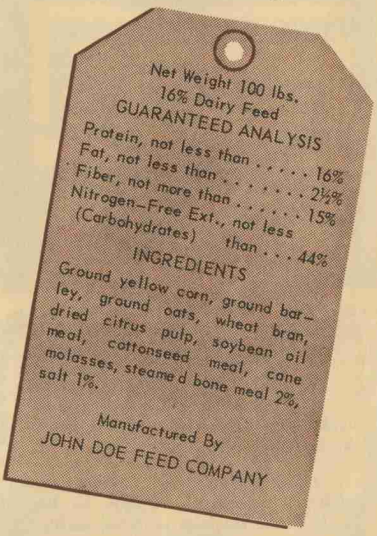
FIRST, decide what the feed is to be used for. Is it to be fed to milking cows, dry cows, or heifers?

THEN, consider the amount and quality of roughage available for the cattle. If the roughage is of top quality, contains legumes, and you have a plentiful supply, a 12% protein grain mixture for milking cows is all right. If your roughage is of poor quality and has little or no legumes, you'd better use a 16% protein feed for milking cows. Dry cows and heifers can get along with less protein than milking cows.

ALWAYS choose a feed that is high in usable carbohydrates (nitrogen–free extract 50% or more), low in crude fiber (12% or less) and with at least 3% crude fat––regardless of the protein content.

This should give you a feed that is high in digestible nutrients.

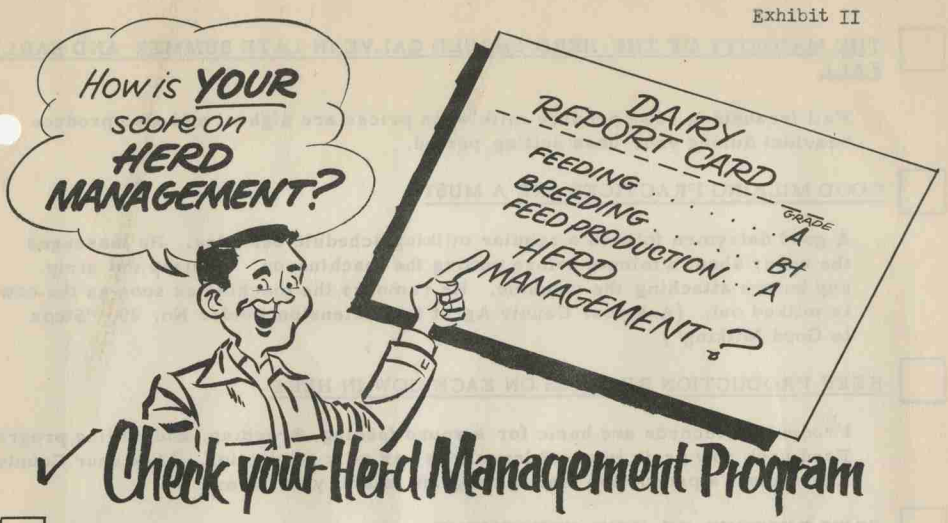
Read The Tag



The above tag shows the *minimum* amounts of fat and carbohydrates and the *maximum* amount of fiber permitted by the N. C. state law for a 16% protein dairy feed.

Your guide to the contents of the bag is the label. The following information is required by the North Carolina feed law and will appear some place on the bag.

1. Net weight of package
2. Name and address of manufacturer, jobber or importer
3. Name, brand or trade mark
4. Name of each ingredient in the bag
5. Guarantee that contents are pure and unadulturated
6. *Minimum* percentage of crude protein
7. *Minimum* percentage of crude fat
8. *Minimum* percentage of nitrogen–free extract (carbohydrates) (listing optional)
9. *Maximum* percentage of crude fiber



✓ Check your Herd Management Program

☐ A COW SHOULD HAVE A 6 TO 8 WEEKS DRY PERIOD

The milk secreting cells need some time to repair themselves; a stronger more vigorous calf will be dropped, and an adequate dry period will give the cow a chance to get in a better state of flesh for the next calving. A study of some 2500 records revealed that cows having a dry period of 50-60 days produced about 1000 pounds more milk than those which were dry less than 30 days.

☐ A COW SHOULD BE IN GOOD CONDITION AT CALVING

A study by Wisconsin workers showed that cows in "good" condition at calving produced an average of 2000 pounds more milk than those in "fair" condition. Each cow in the herd should be considered individually and fed so as to have her in good flesh at calving time.

☐ DELAY BREEDING UNTIL AT LEAST 50 DAYS FOLLOWING CALVING

This practice will mean that your cows will settle with calf sooner on the average than if you start before 50 days. The reproductive tract must be given some time to get back to normal following calving.

☐ A COW SHOULD HAVE ACCESS TO WATER AND SALT AT ALL TIMES

Research work in Iowa and also at Beltsville showed that dairy cows will produce about 3 per cent more milk when they have access to water at all times than when they are watered twice each day.

(over)

☐ THE MAJORITY OF THE HERD SHOULD CALVE IN LATE SUMMER AND EARLY FALL

Fall freshening cows produce milk when prices are highest and also produce heaviest during your base setting period.

☐ GOOD MILKING PRACTICES ARE A MUST

A good dairymen follows a regular milking schedule each day. He massages the udder about a minute before putting the machine on. He uses the strip cup before attaching the machine. He removes the machine as soon as the cow is milked out. (Ask your County Agent for Extension Folder No. 99, "Steps to Good Milking")

☐ KEEP PRODUCTION RECORDS ON EACH COW IN HERD

Production records are basic for a sound feeding, breeding, and culling program. Feed each cow grain in accordance with her milk production. (Ask your County Agent about a production testing program to suit your farm)

☐ COWS RESPOND TO KIND TREATMENT

Milk production is influenced, or even controlled to a great extent, by certain harmones in the blood stream. When cows become nervous or excited, those harmones which are associated with milk production are overshadowed by others which curtail production.

☐ DRY AND WELL BEDDED LOUNGING QUARTERS ARE ESSENTIAL

Clean quarters are necessary for producing quality milk and controlling mastitis.

☐ AN EFFECTIVE FLY CONTROL PROGRAM SHOULD BE FOLLOWED ON EVERY FARM

Bother from flies means lowered milk production.

☐ A GOOD DAIRYMAN DOES A GOOD JOB OF RAISING CALVES AND HEIFERS

This means stronger, higher producing cows, and less loss of calves from disease. (Ask your County Agent for Extension Folder No. 97, "Raise "em Right")

☐ RAISE HERD REPLACEMENTS

The health of your herd should be guarded very carefully.

☐ PRODUCE AND MARKET ONLY TOP QUALITY MILK

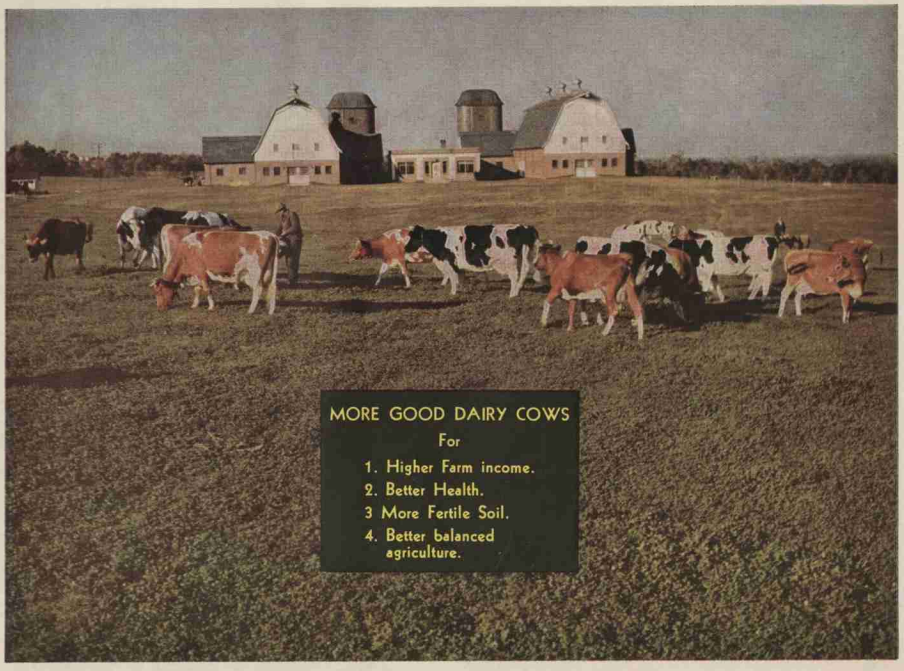
Dairymen lose about $300,000 each year from rejected milk. How much do you lose? (Ask your County Agent for Ext. Folder No. 109, "Quality Milk")

Note: Ask your County Agent for Extension Circular No. 193, "The Care and Feeding of Dairy Cows"

(Prepared by: Dairy Extension, N. C. State College

Exhibit III

A GUIDE TO BETTER DAIRYING



LADINO CLOVER PASTURE

N. C.'S DAIRY PROGRESS D

ANNUAL FEED FOR ONE COW

The following acreages and amounts are guides for meeting the feed needs for a 1,000 pound cow producing 7,500 pounds of 4 per cent milk annually. Provide more for larger cows. During good seasons this grazing acreage will be in excess. During dry seasons it will be a minimum. Two heifers equal one cow.

1½ Acres improved permanent pasture
½ Acre supplementary grazing
5 Tons of silage*
1 Ton of high-quality hay*
20 Bushels of corn or milo
20 Bushels of oats (14 bu. Barley)
400 Pounds of protein supplement

* All legume hay or all silage or any combination is satisfactory. Three pounds of silage replaces 1 pound of hay.

FEED FOR 12-COW HERD (10 cows and 4 heifers)

18 Acres improved permanent pasture
6 Acres supplemental grazing (small grain, sudan grass, lespedeza, alfalfa, etc.)
60 Tons of silage
12 Tons of high-quality hay
240 Bushels of corn or milo*
240 Bushels of oats*
2½ Tons of protein supplement

* Substitute Barley for either grain pound for pound

MAKE MAXIMUM USE OF SILAGE

- Use as the first substitute for pasture
- Silage can be made from pasture and hay crops
- Make Silage from hay crops in wet weather
- Permanent upright silos preferred—many inexpensive silos are satisfactory
- Preservatives recommended for legumes

)EPENDS ON BETTER FEED

HOW TO GROW IT

1. Seed Permanent Pastures August 15 to September 15, or in March.

Seeding Per Acre	Fertilization
2 lbs. Ladino Clover and 10 to 12 lbs. Orchard Grass OR 2 lbs. Ladino Clover and 8 to 10 lbs. Tall Fescue	Use soil test 1 to 2 tons limestone 800 to 1,000 lbs. 2-12-12 at seeding. Topdress with 500 lbs. 0-10-20, 0-9-27 or 0-14-14 each year 5 tons manure can replace 100 lbs. mineral fertilizers.

Clip Pastures . . . Rotate Grazing . . . Make Silage from surplus . . . Do Not Over-graze, leave three inches and never less than two.

2. Supplementary Grazing (permanent or temporary)—also for silage

*a. Small grain (4-6 bu.) and 15 lbs. Crimson Clover. Seed early (August).

*b. Sudan grass (Tift) and millet (Pearl and Starr on sandy soils).
Sudan grass—Seed 30 lbs. drilled; 15 lbs. in rows. (May thru July)
Pearl millet—Seed 20 lbs. drilled; 10 lbs. in rows. (May thru July)
* Use 400 lbs. 8-8-8 fertilizer per acre at seeding.
Topdress 30-60 lbs. of Nitrogen—split applications.

c. Alfalfa—When pastures get short, graze alfalfa instead of cutting for hay.
Grow to hay stage then graze off quickly. Strip or daily ration grazing preferable.

3. Grow More and Better Quality Hay With Alfalfa.

a. Seed between August 20 and September 15 in Piedmont.
Seed between August 10 and September 1 in Mountains.

b. Use Atlantic or Oklahoma Common seed, 25 lbs. per acre.

c. Use 1 to 3 tons of lime, depending upon soil test, and 800 to 1,000 lbs. of 2-12-12 with borax per acre. Topdress with 500 lbs. of 0-9-27 with borax each year.

d. Makes excellent silage when weather prevents hay-making.

4. Grow More Corn Per Acre (for grain and silage).

Use adapted hybrid seed for grain or silage.
Prepare a good seed bed.
Use enough fertilizer (300-400 lbs. 8-8-8 or 5-10-10 per acre).
Provide enough plants (16 inches in 3-½ ft. rows for 75 bu.).
Sidedress with 60-80 lbs. nitrogen.
Cultivate shallow to protect corn roots.
Each 5 bushels of corn will normally produce 1 ton of silage if the crop is harvested for silage.

5. Double Small Grain Yields

Seed on time Use adapted seed	Use 300-400 lbs. 5-10-5 or 5-10-10 Apply 30 to 60 lbs. nitrogen as a topdresser, February 15.

FEEDING AND MANAGEMENT

1. Good grazing is your cheapest feed. Provide maximum grazing from improved permanent pasture. Fill in with supplementary grazing.
2. Give cows all the good quality legume hay and silage they will eat when not on pasture.
3. Use a 16% protein grain mixture with medium quality hay and silage. One of the following mixtures of home grown feeds is satisfactory.

300 lbs. corn & cob meal	600 lbs. corn & cob meal
500 lbs. ground oats or barley	150 lbs. ground oats or barley
200 lbs. cottonseed or soybean meal	250 lbs. cottonseed or soybean meal
10 lbs. salt and 20 lbs. steamed bone meal	10 lbs. salt and 20 lbs. steamed bone meal

4. Use a 12 to 14% protein grain mixture with high quality legume hay and silage. One of the following mixtures is suggested:

600 lbs. corn & cob meal	400 lbs. ground milo
300 lbs. ground oats	500 lbs. ground oats
100 lbs. cottonseed or soybean meal	100 lbs. cottonseed or soybean meal
10 lbs. salt and 20 lbs. steamed bone meal	10 lbs. salt and 20 lbs. steamed bone meal

5. Feed grain according to milk production and quality and quantity of roughage—about 1 pound to each 3 pounds of milk for Jerseys and Guernseys and 1 to 4 for Holsteins and Ayrshires. Less grain can be fed if plenty of high-quality roughage is available.
6. Keep some kind of production records on cows at all times.
7. Cull cows that produce less than a minimum of 5,500 pounds of milk annually.
8. Breed during November, December, and January for fall freshening.
9. Use proved bulls known to transmit high production.
10. Give each cow a rest period of 6 to 8 weeks before freshening. Feed grain to put dry cows in good condition.
11. Keep cows clean and comfortable. Provide both shade and shelter.
12. Provide a constant supply of clean, fresh water, loose salt, and steamed bone meal.
13. Milk quickly, completely, and at regular intervals.
14. Handle cows gently. Rough treatment and high production are never found in the same barn.

(SEE YOUR COUNTY AGENT FOR FURTHER INFORMATION)

Circular revised by Marvin E. Senger and George Hyatt, Jr., Dairy Extension Specialists, and S. H. Dobson, Agronomy Extension Specialist, N. C. State College, Raleigh, North Carolina

August, 1954 (Revised) Extension Circular 294

North Carolina State College of Agriculture and Engineering of the University of North Carolina and U. S. Department of Agriculture, Cooperating. N. C. Agricultural Extension Service, D. S. Weaver, Director, State College Station, Raleigh. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

PROJECT II (a) - PRODUCTION TESTING

Production testing in our dairy herds is a phase of the dairy extension program that is basic in the management and improvement of our dairy cattle and essential for greater efficiency and profit in the production of milk on our dairy farms. It is also basic in a good dairy extension program. Therefore, it is definitely a long-time project and must be continued year after year if it is to provide maximum benefits for our dairyman and an extension program. Continuous production and feed records on all cows is the best guide any dairyman can have to increase and maintain a profitable production level in his herd. This, in turn, will increase his net income and afford him and his family a better living. Even when economic conditions on the farm are not bright the dairyman with high producing cows is in the most favorable condition to meet high costs and the most likely to survive. This is clearly illustrated in Table I which is a study of 410 herds that completed a testing year in a North Carolina Dairy Herd Improvement Association in 1954. Although records are not kept on labor in DHIA testing, data from other studies were used to show what a dairyman might expect for his labor according to the production level of his cows.

This table emphasizes the advantage of high producing cows. To develop high-producing and profitable cows and herds, requires intelligent culling of low-producing and unprofitable cows, improvement in feeding and management practices, and selecting replacements from high producing cows and production bred sires. Production and feed records are the best measuring sticks that can be used on our dairy farms for this job.

Table I

Returns at Different Levels of Production
per Cow per Year
North Carolina DHIA Study - 1954

Pounds Milk	Pounds B'fat	Value of Product	Feed Cost	Value Above Feed Cost	Return Over All Costs*	Return for Labor**	Labor Return Per Hr***
5042	207	$302	$151	$151	$ - -	$75.50	$ .60
6036	253	360	178	183	5.00	93.00	.74
7263	303	430	199	231	32.00	141.50	1.13
8773	348	521	220	302	82.00	191.00	1.53
9769	395	585	252	332	80.00	207.00	1.67
1,0888	441	669	284	386	102.00	243.00	1.94

*Assuming feed cost is one-half the cost of producing milk
**Assuming costs other than feed and labor is one-fourth the cost of producing milk
***Estimating an average of 125 hours to care for one cow per year

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Tables II and III will show that the use of production records have been effective in increasing production and returns for DHIA members. However it should be noted that the return overffeed cost and over all costs is gradually decreasing. Table II shows conditions in 1954 very comparable to those in 1948. But the dairymen with herds that will average 9000 pounds of milk and 350 pounds of butterfat or more (Table I) are still in a position to receive a good return from dairying.

Table II

Average Production, Feed Cost, Value of Product
and Returns Over Feed Cost for All Cows in DHIA by Years

Year	Average Milk Production	Average B'fat Production	Value of Product	Feed Cost	Value Above Feed Cost	Return Over All Costs*
1941	7188	317	$264	$ 87	$177	$ 90
1942	7019	313	271	97	174	77
1943	6676	301	279	113	166	53
1944	7215	316	324	145	179	34
1945	7545	337	364	161	203	44
1946	7798	334	393	173	220	47
1947	7291	321	423	188	235	47
1948	8048	339	487	215	272	57
1949	7799	340	495	203	292	89
1950	8076	341	485	186	299	113
1951	8158	351	500	194	306	112
1952	8126	337	507	209	298	89
1953	8030	326	503	221	282	61
1954	8197	331	495	219	276	57

*Assuming feed cost is one-half the cost of producing milk

When the production of the average DHIA cow is compared to the estimated average production of all North Carolina dairy cows the value of production testing becomes increasingly significant. The average of all North Carolina dairy cows in 1954 was 4520 pounds of milk and 194 pounds of butterfat. The average production for DHIA cows for the same year was 8197 pounds of milk and 331 pounds of butterfat. This is a difference of 3677 pounds of milk and 137 pounds of butterfat in favor of DHIA cows. By fitting these production averages to Table I the value of production testing to North Carolina

dairymen can further be recognized. Table III shows a comparison of average production of all North Carolina dairy cows with that of cows tested in North Carolina Dairy Herd Improvement Associations over the years. It should be noted that the rate of increase in production perc cow has been much greater for cows in Dairy Herd Improvement Associations.

Table III

Average Production of all Milk Cows and DHIA Cows
In North Carolina by Years

	All Cows		DHIA Cows	
Year	Milk	B'Fat	Milk	B'Fat
1930	3770	162	6298	267
1935	3450	148	6359	278
1940	3930	173	7188	317
1945	4030	181	7545	337
1950	4460	198	8076	341
1951	4450	198	8159	351
1952	4500	198	8126	337
1953	4490	200	8030	326
1954	4520	194	8197	331

It is impossible to determine the total influence of production testing on dairy farming in North Carolina but it should be recognized that herds with production records are demonstrating better dairy practices and providing herd sires and foundation females for other dairymen throughout the state. Outstanding bulls used for artificial breeding are selected from herds on test on the basis of production of their daughters and other animals in the pedigree. Production records are also serving as a basis for the selection of 4-H dairy calves.

With the trend of decreasing returns as indicated in Table II and applying the production level of all North Carolina dairy cows to Table I there should be a real concern regarding the future of many North Carolina dairymen. Greater emphasis needs to be given to the adoption and use of production and feed records for more efficient and profitable dairying. A large number of dairy cows must be on continuous test if dairymen the state over are to be able to breed and raise high-producing herds that are more profitable to them.

Dairy Herd Improvement Associations

The U.S. Department of Agriculture and the North Carolina Agricultural Extension Service cooperate in carrying out this project with the dairymen in the state. County agents take an active part in organizing and guiding the local Dairy Herd Improvement Association in their respective counties. Dairy specialists train the testers, help supervise their work in the field and assist dairymen with problems confronting their association. The county agents and dairy specialists work closely together with all problems confronting the testers and the dairymen. This is the most practical type of production testing and provides the most information for herd management for North Carolina dairymen.

Two new associations were started in 1955 while three small associations were discontinued. Most of the herds tested in these associations were transferred to other associations while a few of them discontinued test. The result, however, was still a greater number of cows and herds on DHIA test and an increase in the number of cows and herds per association.

As of November 30, 1955 there were 510 herds with 18,443 cows enrolled in DHIA test. This is an increase of 16 herds and 1464 cows over a year ago and is the largest number of cows ever to be enrolled in DHIA in North Carolina.

Table IV shows the growth of DHIA testing in North Carolina since 1945.

Even though DHIA testing continues to grow it should be pointed out that the progress in 1955 was not as great as in previous years. This can be attributed, at least in part, to lack of funds by dairymen for this service and a number of herds on DHIA test selling out. Dry weather, causing short feed crops, and adverse market conditions in one area has been a definite disadvantage to the progress of DHIA testing. Plans for more concentrated effort, urging more dairy herds to adopt and use some type of production records, are being developed.

Continued emphasis was placed on reorganization of the existing DHIA testing in numerous areas throughout the state as well as to establish local testing organizations. This included increasing the average number of herds and cows in an association, and at the same time eliminating excessive travel for supervisors and making travel charges to dairymen more reasonable and uniform. Even though the average number of herds and cows is still low per association (see Table IV) some have sufficient numbers within a reasonably small area to make testing jobs somewhat more attractive salary-wise as well as in convenience, especially for married men. The low average in number of herds and cows is attributed in part to several associations that have only a part-time job and some new associations not filled to maximum membership as yet. More work needs to be done, however, along this line to get more efficient and maximum service from testers specially trained for this work. Table V is a listing of the active associations in North Carolina including the counties covered, and number of herds and cows in each. DHIA testing is reaching 80 counties in North Carolina.

Table IV

Cows and Herds on DHIA Test in North Carolina
(January 1 of Each Year)

Year	No. Assn's	Grade A	Herd DHIA	% on DHIA	Kept for Milk*	Cows DHIA	% on DHIA	Average per Assn. Herds	Average per Assn. Cows	Cows per Herd
1945	7	--	104	--	400	4132	1.0	14.9	590	39.7
1946	6	--	79	--	384	3100	.8	13.2	517	39.2
1947	11	--	141	--	376	4676	1.2	12.8	425	33.2
1948	17	2008	181	9.0	376	5751	1.5	10.6	338	31.8
1949	18	2633	201	7.6	361	6226	1.7	11.2	346	31.0
1950	19	3597	283	7.9	361	8403	2.2	14.9	442	29.7
1951	21	4159	265	6.4	372	9075	2.3	12.6	432	34.2
1952	24	4425	298	6.7	376	10092	2.7	12.4	421	33.9
1953	30	4742	418	8.8	380	13654	3.5	13.9	455	32.7
1954	33	5189	456	8.9	377	15387	3.8	13.8	466	33.7
1955	35	5137	494	9.6	391	16979	4.3	14.1	485	34.7
1956	34	4937	510	10.3	366**	18443	5.0	15.0	542	36.2

*Given in thousands (add 000)
**June 1955 North Carolina Farm Report

Table V

Active DHIA's in North Carolina
December 31, 1955

Association	County or Counties Covered	Tester	No. Herds	No. of Cows
Alamance	Alamance	B. Martin	10	512
Alexander	Alexander	H. Oxford	5	292
Buncombe	Buncombe, Haywood, Yancey, Mitchell	J. Ramsay	9	263
Burke-Caldwell	Burke, Caldwell	K. Sims	17	452
Capital # 1	Durham, Person	G. E. Hager	8	324
Catawba	Catawba	J. Wilkinson	23	776
Cleveland*	Cleveland	J. Hunt	16	468
Cumberland(Org. 1-55)	Cumberland, Sampson	W. Sloan	17	643
Davidson	Davidson	T. Ward	14	466
Davie	Davie	E. Greble	9	264
East Central	Wayne, Lenoir, Craven Jones, Carteret, Onslow, Wilson	H. B. Wilkie	23	1192
Forsyth	Forsyth, Stokes	E. Greble	25	623
Golden Belt	Halifax, Warren, Granville, Vance, N. Hampton, Bertie	M. Hughes	16	597
Guilford* 1	Guilford	R. Siler	18	557
Guilford *2	Guilford,Rockingham	E. Harrison	24	997
Iredell	Iredell	T.C. Henderson	16	473
Lincoln (Org. 2-55)	Lincoln	W. Dellinger	11	261
Macon	Macon	J. C. Williams	10	197
McDowell	McDowell	L. Thompson	1	19
Northeastern	Pitt, Edgecombe Nash, Beaufort	D. Brown	20	765
Northwestern	Ashe,Watauga,Avery	E. Moretz	5	122
Orange-Chatham	Orange, Chatham,	G. Reynolds	24	889
Piedmont # 2	Mecklenburg,Cabarrus	M. Black	9	363
Piedmont # 6	Union	K. Williams	10	297
Piedmont # 9	Rowan	T. S. Sloan	10	329
Pisgah*	Henderson	H. K. Lutz	18	761

Table V (Continued)

Association	County or Counties Covered	Tester	No. Herds	No. of Cows
Randolph	Randolph	C. Glass	22	872
Southeastern	Bladen, Columbus, Pender, N. Hanover, Duplin Scotland, Robeson	E. Riverbark	22	802
Southwestern # 3	Cherokee, Clay, Henderson, Haywood	W. P. Walker	17	598
Southwestern # 4	Rutherford, Polk Lincoln, Gaston	C. R. Nichols	22	875
State Institutions	Wake, Burke, Wayne, Lenoir, Watauga	R. Bryant	10	755
Tri-County	Montgomery, Moore, Lee Stanly, Richmond	C. Burleson	17	624
Wake	Wake, Granville, Johnston	G.K. Davis	15	690
Yadkin	Yadkin	H. Fleming	13	355
Miscellaneous**	Caswell	C. Stephens	4	170
34 Associations			510	18443

*Names were changed on following associations during the year: Capital # 2 now Wake, Southwestern 5 now Cleveland, Piedmont I-A now Guilford 1, Piedmont I-B now Guilford 2, and Southwestern # 1 now Pisgah.

**Miscellaneous - not counted as an association

NOTE: Southwestern # 2 association has discontinued, and the herds desiring DHIA testing were added to the Buncombe and Southwestern # 3 associations. Due to loss of herds and transferring some herds to a new association, Catawba # 2 and # 3 were discontinued.

During the year four more associations were properly organized with the dairymen assuming the responsibility of the operation of the organization. All new associations are being set up in this manner. These local organizations have been a tremendous help in the supervision and the expansion of the DHIA program.

To protect individual members against liability due to accidents by their employee (the tester) testing associations were encouraged to incorporate as a non-profit cooperative under the state laws. As a result, seven incorporated cooperatives, one including two testing units, were legally set up. The incorporated organizations are listed in Table VI. Considerable assistance in preparing the necessary forms and explaining the step for incorporation was given by a Farm Management Specialist.

Table VI

List of Incorporated
Dairy Herd Improvement Associations

Name	Testing Units	Date Incorporated
Guilford DHI Coop., Inc.	2	February, 1955
Lincoln DHI Coop., Inc.	1	February, 1955
Catawba County Coop. DHIA, Inc.	1	February, 1955
Tri County DHI Coop., Inc.	1	February, 1955
Cleveland DHI Coop., Inc.	1	April, 1955
East Central DHI Coop., Inc.	1	May, 1955
Wake DHI Coop., Inc.	1	September, 1955

Promotional Materials

To illustrate the need for a greater use of production records on our dairy farms several things were developed for use in educational work by specialists and county agents.

A flannel board was prepared with figures in color to illustrate that low producing cows are not profitable. This was based on 1953 DHIA data and was used in a number of winter schools as a part of a discussion on "Things to Consider in Culling the Dairy Herd". A mimeographed leaflet was prepared on this subject. Figure I is a picture of this visual aid.

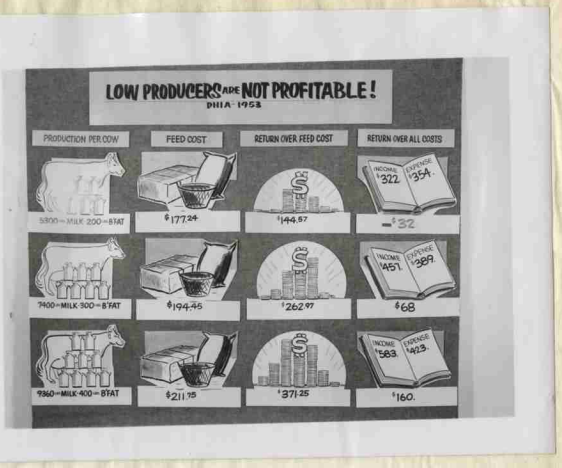


Figure I

A leaflet "Do You Know Your Cows" was prepared and 15,000 copies printed. A number of copies have been distributed and more will be used to interest dairymen in production testing. It is not to be used to encourage only DHIA testing but written to encourage some kind of production testing on every dairy farm, regardless of size of herd, kind of cows, income, etc. It explains four systems of production testing, one of which should fit any farm. A copy of this leaflet will be found in the exhibits following this section. (Exhibit I)

A panel exhibit was prepared on production testing for use at the North Carolina State Fair as a part of the educational dairy exhibits. It was based largely on the leaflet "Do You Know Your Cows" and the leaflet was available for pick-up by viewers. This exhibit will be used at numerous

other dairy meetings and for educational dairy displays. (Figure II)

Figure II

To help dairymen better understand and make greater use of their production and feed records three mimeographed forms were developed to use in meetings of DHIA members. These are workshop type of meetings where the members bring their herdbooks to the meetings and assistance is given them in interpreting their records and helping them plan for greater herd improvement. Greater emphasis will be put on these meetings the following year.

Training Testers

One of the main problems in DHIA testing is securing sufficient trained personnel to meet the need for replacements in existing associations and to start new associations. This problem is becoming somewhat more acute in recent months and requires a considerable amount of the specialist's time. To provide properly trained personnel for testing jobs this past year two

two-week training courses were conducted. Qualifications to attend the training course to become eligible to apply for a testing position consisted of farm experience, a high school education or equivalent, ability to handle simple arithmetic, a liking for record keeping and an interest in Dairy Husbandry. A new leaflet was prepared describing DHIA work and the Training Course for distribution to county agents and interested persons.

Only persons completing the training course satisfactorily are recommended for testing positions. In the two training courses seventeen men enrolled; sixteen men completed the training course satisfactorily and nine were placed in North Carolina associations. Individual training was given another man to fill a temporary opening. An outline of instruction of a typical training course and the leaflet describing the course will be found with exhibits following the production testing section. (Exhibits II & III)

Tester Conferences

Two two-day DHIA Supervisor's Conference were held in October 1955; one for testers in the eastern half of the state and one for those in the western part of the state. These conferences were for the purpose of bringing the supervisors up to date on DHIA procedure, making greater use of DHIA records, making DHIA records more accurate, as well as other material relating to dairy production. Special emphasis was put on more accuracy in obtaining feed records. Testers led a panel discussion on how they could make their job more effective. Such discussions aid in standardizing the work throughout the state and help to provide a better understanding between testers and extension personnel. All but three testers attended the conference. A copy of the conference program will appear in the exhibits following the production testing section. (Exhibit IV)

In addition to the conferences numberous field visits were made with testers on the job to review their record keeping and testing work. Considerable assistance was given in this way to many of their individual problems.

Meetings

To better acquaint the dairymen and dairy leaders with production testing and to encourage greater use of production records, production testing was one of the major subjects of discussion at forty-two dairy meetings of which fourteen were annual meetings of DHIA's. Production testing was further discussed at a district county agent meeting, one Artificial Breeding Short course and ten other meetings of dairy cattle breeders, dairy leaders and leaders in related fields. Twelve meetings were held with DHIA members to help them properly organize their testing work as an association. Some of these consisted of incorporating their associations as a non-profit cooperative. Six DHIA director meetings were attended to help local associations with operating and tester problems.

Recognition

To recognize good dairy management practices in DHIA herds as measured by high average production and encourage greater use of DHIA records, Honor Roll Certificates were issued to DHIA members with herds averaging 350 pounds of butterfat per cow or more. One-hundred and fifty-six herds received these certificates with one averaging over 500 pounds of butterfat per cow, seven between 450 and 499 pounds, forty-five between 400 and 449 pounds and one-hundred and three between 350 and 399 pounds. These certificates were presented in cooperation with the Purebred Dairy Cattle Association and North Carolina State College. In addition two state dairy cattle breed

associations recognized the high DHIA herd in their breed, the award being presented at their annual meeting.

Contests

Through the cooperation of the National Dairy Products Corporation, two DHIA contests were sponsored; the Efficient Dairy Production Contest for DHIA members and the DHIA Supervisor's Contest for DHIA Testers. These contests were conducted the same as in the previous year. The 1954 winners of each contest which were announced this year are as follows:

Winners - Efficient Dairy Production Contest For DHIA Members - 1954

Placing	Name and Address	DHIA	Award
1st	S. E. Thacker Whitsett, N.C.	Guilford # 2	$30 and Bronze Plaque
2nd	John M. Waldroup Hayesville, N.C.	Southwestern # 3	$20 and Bronze Plaque
3rd	David Cummings Guilford College, N.C.	Guilford # 2	$30
4th	H. L. Hill, R. # 8 Lexington, N.C.	Davidson	$25
5th	Russell Oxford, R. # 2 Taylorsville, N.C.	Alexander	$20
6th	Wm. D. Coble Guilford College, N.C.	Guilford # 2	$15
7th	A. L. Shuford, Jr. R. # 1, Newton, N.C.	Catawba	$10

Winners - DHIA Supervisors' Contest
1954

Placing	Name	Association	Prize
1st	Edmond Harrison	Guilford # 1	$30 and Bronze Plaque
2nd	John Wilkinson	Catawba	$20 and Bronze Plaque
3rd	Wm. Walker	Southwestern # 3	$30
4th	Keith Williams	Piedmont # 6	$25
5th	Ed Greble	Forsyth	$20
6th (tie)	Martin Black	Piedmont # 2	$12.50
6th	Charles Glass	Randolph	$12.50

Nineteen DHIA members entered the Efficient Dairy Production contest and some very interesting and helpful information was summarized from their entry questionnaires.

Newsletter and Releases

To further encourage production testing, to summarize production records, and to bring timely material on various phases of dairying to DHIA members and others, the "Dairy Extension News" is published monthly. This publication is sent to each dairyman doing any type of production testing, as well as to county agricultural agents, DHIA testers, Artificial Breeding Technicians and others who have indicated their interest in dairying. An average of approximately 1200 copies was mailed each month in 1955. A representative copy is exhibited following the production testing summary. (Exhibit V) Much of this material was used in radio and newspaper releases throughout the state. In addition to the statewide letter twelve local DHIA Newsletters are published monthly through the cooperation of the county agent and dairy tester.

To keep DHIA testers and county agents informed on production testing and related dairy activities, nine issues of the "Chat With the Testers" (Newsletter to testers) were prepared and sent out which included a total of 950 copies. In addition fourteen form letters were prepared and a total

of 1785 of these were mailed to testers, county agents, vocational agricultural teachers, and breeders. The use of the "Chat Sheet" has helped to eleminate excessive numbers of form letters to testers.

In trying to keep the county agent currently informed of production and feed data on DHIA herds (often recognized as demonstration herds), and to provide DHIA testers with accurate herd summary data, a report of yearly herd averages for feed and production data on each DHIA herd is prepared and sent to the tester and county agent. It is hoped that this will provide current usable facts for county agents in working with dairymen and in developing more efficient dairying.

In addition to the material referred to here, three radio talks and three television shows were prepared and given to encourage wider use of production records.

To further aid with the efficiency in supervising the production testing work nine mimeographed and one printed forms were prepared, three mimeographed forms were revised, five mimeographed leaflets were prepared and one other leaflet revised. This material was prepared for use by testers, county agents, and office personnel.

Lactation Records

A very important phase of DHIA testing is the information it provides for the improvement of our dairy herds through breeding. Special effort has been made to encourage DHIA supervisors to report all 305 day lactation records for use in proving sires. Sires known to transmit high production to their offspring are invaluable in dairy herd improvement and it is especially important that a high percentage of sires used in dairy herd improvement associations be proved. This is the main source of information for locating

and selecting superior sires for artificial breeding. Bull selection committees are making good use of the DHIA proved-sire service as a basis for intelligent selection of bulls to be used. It is also essential that all 305 day lactation records be reported on as many daughters as possible of bulls used in artificial breeding so as to give added information on these bulls.

Table VII

Number of 305-Day Lactation Records Reported
And Proved Sire Records Received by Years

Year	305-Day Records Number	Percent*	Proved Sire Records
1938	194	4.0	4
1939	562	10.3	8
1940	988	15.0	21
1941	868	13.0	13
1942	475	6.0	13
1943	330	6.0	22
1944	308	6.0	15
1945	192	5.0	7
1946			3
1947	380	8.1	10
1948	707	12.3	14
1949	1462	23.5	40
1950	2807	33.4	29
1951	2507	27.6	18**
1952	5120	50.7	41**
1953	5416	39.9	94
1954	6871	45.1	104
1955	7487	44.1	120

*Percent of 305-Day Lactation Records reported of all cows on DHIA test as of January 1, of that year.
**Daughter averages given as an alternative service for proved sire reports.

During 1955, 7487 305-Day lactation records were reported by DHIA supervisors. This is 44.1 per cent of all cows enrolled in DHIA test as

of January 1, 1955. During the same period and as a result of reporting 305-day lactation records previously, one-hundred and twenty proved sire records were received from the Dairy Husbandry Research Branch by the Dairy Extension Office. As this information was received through the Dairy Extension Office, it was forwarded to dairymen using bulls concerned, the dairy tester and the county agent. Table VII shows the progress that has been made in reporting lactation records and the amount of information that has been made available in the form of proved sire reports.

I wish to recognize the splendid cooperation given us by Dr. J. F. Kendrick, Head of Dairy Herd Improvement Investigations Division, Dairy Husbandry Research Branch, USDA, and his staff. They have been extremely helpful in supplying proved sire information and daughter averages to be used in the selection of superior sires for artificial breeding, as well as for individual herds. He has also provided us with DHIA production and feed summaries for individual herds, for counties and for the state. These summaries have proved very helpful in the dairy extension program, to dairy specialists, and county agricultural agents.

I also wish to recognize the fine cooperation of the State Dairy Cattle Breed Associations, the National Dairy Products Corporation, other extension specialists, county agricultural agents, DHIA boards of directors, and dairy testers for their cooperation in the advancement of a sound production testing program in North Carolina.

Herd Improvement Registry

For many years the agricultural colleges in all states have served as a disinterested party between the breeders and the breed association in supervising official testing. Each of the five breed associations have extensive official testing departments and is interested in providing the breeders with a system of records adapted to their needs. These records must be carefully

supervised and are of two types, Herd Improvement Registry and Advanced Registry.

The Herd Test, as sponsored by the breed associations, is not unlike Dairy Herd Improvement Association testing because it too emphasizes continuous testing of all animals in the herd over a period of years. Throughout the United States its popularity is very definitely on the increase and more and more of the purebred breeders are relying on this type of test to develop a herd, build a breeding program and likewise furnish official records which are beneficial in helping them dispose of surplus breeding stock and in making up pedigrees. In most instances in North Carolina the Herd Test is run in conjunction with the regular monthly Dairy Herd Improvement Association test. In this way the same tester does all the work in one visit at a considerable saving in cost to the breeder.

Table VIII

Herds and Cows on Herd Improvement Registry Testing
(As of November 30 of Each Year)

	1953		1954		1955	
	No. Herds	No. Cows	No. Herds	No. Cows	No. Herds	No. Cows
Ayrshire	15	530	15	536	13	494
Guernsey	18	461	22	709	21	1213
Holstein	38	1145	35	1171	31	1191
Jersey	28	1125	26	1123	24	1032
Goats	2	49	2	70	2	76
Total	101	3310	100	3609	91	4006

In the past year there has been an increase in the number of cows on HIR test with a decrease in the number of herds. This would indicate an increase in size of the purebred herds. Seventeen herds dropped the HIR test while light herds started HIR test during the year.

Annual recognition of high producing HIR herds is being made by three of the State Dairy Cattle Breed Associations in an effort to encourage more of this type of testing in the purebred herds as well as to get breeders to make better use of their records. As can be expected this type of testing is helping to bring about an increase in average milk and butterfat production. Since HIR testing is a continuous test on all cows it is a very helpful tool in culling dairy herds and establishing a sound breeding program for breeders.

Advanced Registry

The number of herds and cows on Advanced Registry test has declined rather steadily in the last four years. This type of test seems to be losing in popularity not only in North Carolina but throughout the entire United States in preference to a testing program for the entire herd. The Advanced Registry Test has been very popular with the Guernsey breed and as shown in Table IX it still is in comparison with the other breeds. However, it is losing popularity in preference to HIR testing.

This type of selective testing is expensive and does not lend itself to the wide spread use in practical dairy herds where the production of the entire herd is the chief concern rather than that of a few selected individuals. It is used primarily by the larger dairy cattle breeders.

Table IX

Herds and Cows on Advanced Registry Test
(As of November 30 of Each Year)

	1953		1954		1955	
	No. Herds	No. Cows	No. Herds	No. Cows	No. Herds	No. Cows
Ayrshire	0	0	0	0	0	0
Guernsey	29	765	23	572	16	368
Holstein	1	1	0	0	0	0
Jersey	4	100	3	123	1	90
Goats	0	0	0	0	0	0
Total	34	866	26	697	17	458

Although the amount of Advanced Registry testing has been and will be quite limited, many benefits are derived from it by North Carolina dairymen. These officially tested herds have been and are sources of highly bred seed stock for newly developing herds and proving established herds in many sections of the state. It provides information on maximum production that can be expected from our dairy cattle under ideal environmental conditions.

Each year the North Carolina Guernsey Breeders and the North Carolina Jersey Breeders Associations recognize outstanding production for individual cows in this type of test at their annual meeting.

Though the bulk of the Advanced Registry testing is done by DHIA supervisors, one full-time tester is employed to work largely with Advanced Registry herds, checking Herd Improvement Registry herds, and assisting with Dairy Herd Improvement work where needed to keep the records continuous.

Other Ways of Keeping Production Records

Recognizing the importance of production records as an essential tool in guiding dairy farmers to greater net profits steps were taken in 1954 to provide other ways for dairymen to keep production records.

Milk and grain charts for use in the barn were distributed to cooperating dairymen through the county agent. It is estimated that 625 dairymen are using this system to keep accumulative milk records on individual cows.

Owner-sampler testing which provides somewhat more information than the milk and grain chart but less data than DHIA testing is being made available by six DHIA testing associations and one cooperative dairy plant. This type of testing has not developed extensively through the DHIA's as yet, probably due to the possibility of losing standard DHIA members since the cost is somewhat less. In January 1955 Long Meadow Farms Dairy set up

a testing program of this type for its patrons. Through the leadership of their fieldman, Ralph Howard, they started 21 herds on owner-sampler testing. It is proving helpful to both the dairymen and the dairy plant. Following is a summary of the progress of the owner-sampler testing. It is hoped that this program will develop further in 1956 and become an alternative system of record keeping on dairy farms through DHIA's and dairy plants where DHIA testing is not being used.

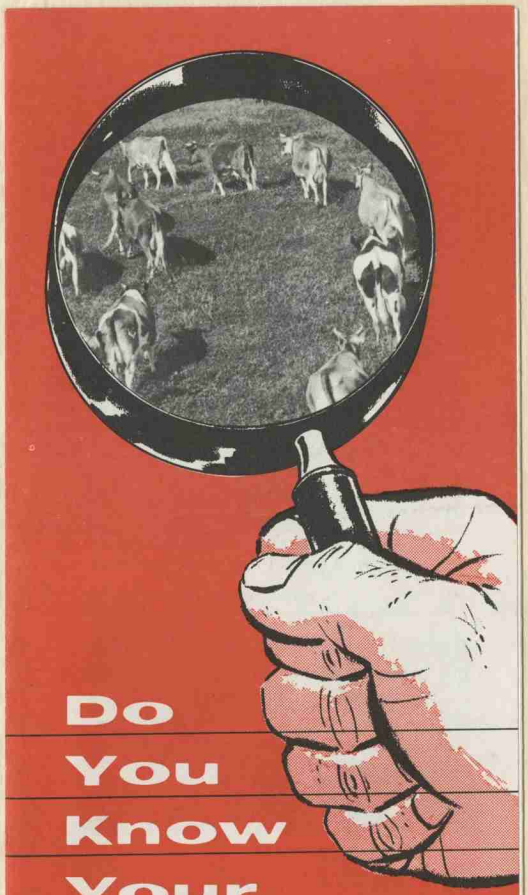
Table X

Herds and Cows on Owner-Sampler Test
(November of Each Year)

	No. Herds	No. Cows
1954	6	149
1955	28	601

With the milk and grain chart and the owner-sampler testing along with the standard types of testing we now have available a system of production record keeping that should fit any kind of dairy farm operation in North Carolina regardless of size of herd, kind of cows, and amount of income. (See Exhibit I)

Exhibit I

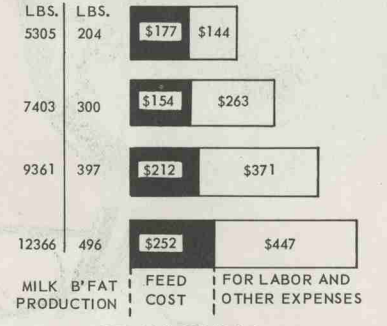


Do You Know Your Cows

WHY KEEP PRODUCTION RECORDS

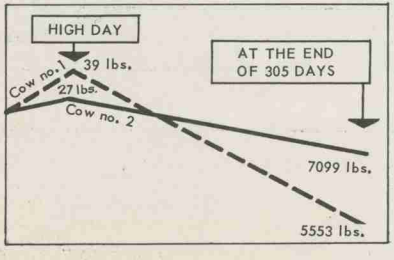
In 1954 the average North Carolina dairy cow produced 4520 pounds of milk and 194 pounds of butterfat, but the average DHIA cow produced 8197 pounds of milk and 331 pounds of butterfat. One–half these cows were grades.

The graph below shows that low producing cows return very little for labor while high producing cows are money–makers.



HIGH DAY IS OFTEN MISLEADING

Weighing or measuring milk when cows are "filling the pail" is not a good indication of their producing ability. Weigh each cow's milk at least one day each month for reliable infor–mation. Some cows produce well soon after freshening but drop off fast. Others may not produce as high at freshening but will hold up well. High daily production can be misleading. The graph below shows why.



A SYSTEM OF PRODUCTION TESTING TO FIT EVERY FARM

For Grade Cows - Registered Cows - Or Both

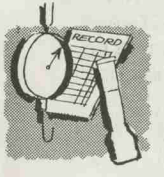
Milk Chart and Scales

The simplest testing method is to get a milk chart for recording milk weights and a set of dairy scales. Weigh each cow's milk at least one day (night and morning) each month. For each cow this record will give you––

*Daily milk production one day each month
*Monthly milk production
*Yearly milk production

The only cost will be dairy scales. Your county agent will furnish the milk chart. This is an easy, inexpensive way to keep production records on each cow.

Owner-Sampler Testing



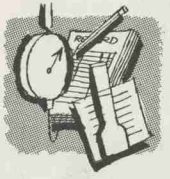
Some dairymen want to know more than just the pounds of milk their cows give. Owner–sampler testing can provide this additional information at a rea–sonable cost.

*Butterfat tests for each cow
*Butterfat production for each cow
*Average monthly production for the herd

Here's how it works. One day each month the owner weighs and samples each cow's milk. The tester picks up the milk weights and samples, runs the butterfat tests and calculates the results. The local Dairy Herd Improvement Association usually provides this service. Other agencies equipped to run butterfat tests may do it. Remember this private record cannot be used officially or for publicity.

Your county agent can get forms for keeping owner–sampler records from the Dairy Exten–sion Office, State College. Testing costs approximately 25 cents per cow per month.

Dairy Herd Improvement Association Testing



DHIA testing pro–vides maximum infor–mation on production and feeding for each cow and the herd. It has these advantages in addition to information given by milk charts and owner–sampler test–ing.

*Income from milk
*Amount of feed fed
*Feed costs
*Return over feed costs
*Calving records
*Identification systems
*Records used for cattle sales
*Recognized as an official record

A tester visits the farm one day each month to weigh and sample milk, make butterfat tests and calculate production and feed records.

A Dairy Herd Improvement Association is a group of dairymen organized to have pro–duction and feed records kept on their herds. The organization is a non–profit cooperative. It furnishes testing equipment and employs the tester. Charges, approximately 45 cents per cow per month, are made to cover expenses. Record forms are furnished to members at no cost by the Dairy Husbandry Research Branch, USDA, through the Dairy Extension Office, State College, and your county agent.

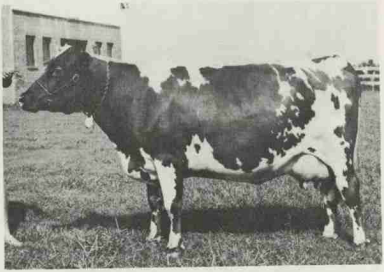
Official Testing

Advanced Registry (AR) and Herd Improve–ment Registry (HIR) are official tests, for registered cattle only, sponsored by the national dairy cattle breed organizations. Breeders may wish to enroll in this type of testing, separately or in combination with the other systems. AR and HIR testers are assigned by North Carolina State College.

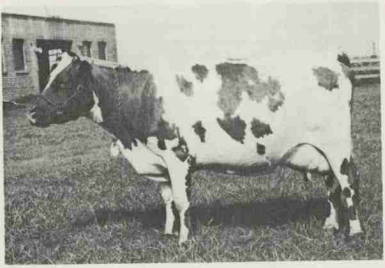
LEARN TO KNOW YOUR COWS

By The
Milk and Butterfat They Give
Profit They Return

COWS MAY LOOK ALIKE BUT PRODUCE DIFFERENTLY



COW A



COW B

One of these cows is worth nearly two of the other.

CAN YOU TELL

Which cow produces the most?
Which cow makes the most profit?

See The Back Page For The Answer.

Exhibit II

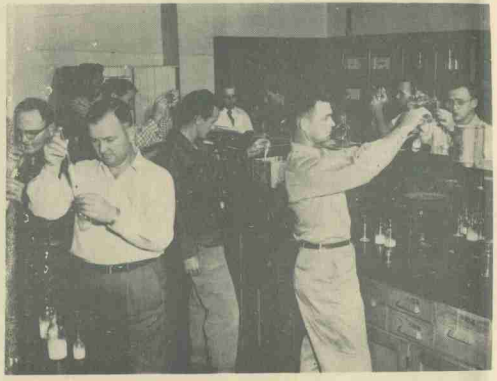
Dairy Herd Improvement Association

TESTERS SHORT COURSE

A JOB WITH OPPORTUNITY

The purpose of the DHIA Testers Training Course is to train persons to keep DHIA records and perform the Babcock test. Persons completing this training course satisfactorily will be eligible to apply for DHIA testing jobs in North Carolina.

Two training courses are held at N. C. State College each year, usually in the spring and fall. County Agricultural Agents and Vocational Agricultural instructors are advised well in the advance of the dates for each course.



Learning to make butterfat tests on milk for DHIA testing.

Since only approximately 15 persons can enroll in each course, an application to attend must be submitted. If interested complete the attached application blank, detach and mail to the Dairy Extension Office, N. C. State College, Raleigh, North Carolina. Upon approval of your application further details will be sent relative to your attending the course. Your County Agricultural Agent can tell you more about DHIA testing or you may write to the Dairy Extension Office, N. C. State College.

QUALIFICATIONS

Anyone with farm experience, perferably dairy, a high school education or equivalent, capable of handling simple arithmetic, and has a liking for record keeping is eligible to take this training course.

Persons doing dairy testing must be interested in dairy husbandry and the improvement of dairy cattle. It is important that a dairy tester exhibit leadership and be able to work and get along with farm people. Above all a dairy tester must be honest and dependable. This type of work can provide valuable dairy experience and offers real opportunity for the right kind of person.

Date of Next Course

to

WHAT DOES IT COST?

TUITION AND BOOKS: The tuition fee is $10 for the two weeks. A tester's computer costing $4.50 and a DHIA supervisor's handbook costing $1 is required. The computer and handbook can be secured after enrolling for the course. A fountain pen and pencils will be necessary. Both black and red ink will be used.

LODGING: Lodging will be available in one of the college dormitories at $3.50 per week. You must furnish your own sheets, pillow cases, blankets and towels.

MEALS: Meals can be secured at the college cafeteria during the school term or any nearby restaurant. They will cost approximately $35 for the two weeks depending on the desires of the individual.

APPLICATION

To Enroll in DHIA Testers' Training Course

Name _____

Address _____

State _____ County _____

Age _____ Married or Single _____

Present Occupation _____

_____ Draft Status _____

Were you raised on a farm? _____

Kind _____

Other Farm Experience _____

_____

Did you graduate from high school?_____

Where _____ When _____

Have you ever worked with a herd on DHIA test?

_____ Whose herd? _____

Have you had any experience with the Babcock test for milk? _____

Do you like arithmetic? _____

Do you like to keep records? _____

Have you had 4-H or FFA experience? _____

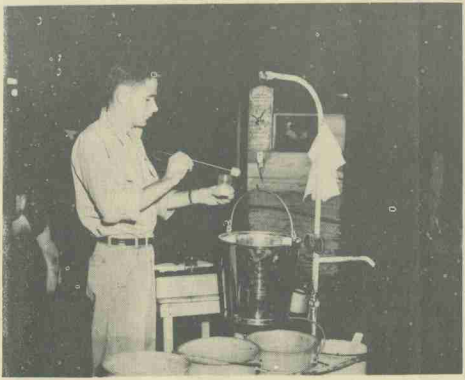
How many years? _____

You will be notified when application is accepted with further details about arriving at N. C. State College to attend this short course.

MAIL TO: Dairy Extension Office
N. C. State College
Raleigh, N. C.

WHAT IS DHIA TESTING?

DHIA stands for Dairy Herd Improvement Association. Dairymen interested in having production and feed records kept on cows in their herds join together as an association. Twenty to twenty-five herds make a full month's work. They hire a specially trained person to come to their farm one day each month to keep this record. It consists of weighing and sampling the milk from each cow night and morning, recording the amount of feed fed to each cow, determining the value of each cow's milk and feed cost and finally giving the return above feed cost. This information is recorded in a permanent dairy herd record book belonging to the dairymen. After twelve monthly visits to each herd a summary for the year is prepared. This work is conducted according to regulations governing standard DHIA work. Persons attending the two weeks training course are thoroughly trained in all phases of this work.



The tester gets milk weights, milk samples and feed weights for each cow in the herd.

Production and feed records are guides for proper culling, economical feeding, and better breeding.

DHIA TESTERS' TRAINING COURSE
Schedule of Classes

Monday

9:30 A. M. Welcome to State College Campus - Dr. J. W. Pou, Head, Animal Industry Dept.
10:00 A. M. The DHIA Program - How Big Is It? - How Does It Operate?

1:15 P. M. The Value of Production Testing.
2:00 P. M. Film, "John Martin and Son".
2:30 P. M. The Supervisor's Job.

Tuesday

8:30 A. M. Explanation of Barn Book.

1:00 P. M. Monthly Testing Period - The Centering System.
2:00 P. M. Uniform Testing Rules for Standard DHIA.

Wednesday

8:30 A. M. Checking Barn Book and Testing Period Problems.
9:30 A. M. Explanation of the Monthly Association Report and Testers' Computer.
10:30 A. M. Getting Information From the Dairymen.

1:15 P. M. Explanation of DHIA Herd Book.

Thursday

8:30 A. M. Checking Barn Book and Herd Book.
9:30 A. M. Why Milk Tests Vary - Dr. Robert B. Redfern, Dairy Manufacturing Specialist.

1:00 P. M. Explanation and Demonstration of the Babcock Test - Dr. R. B. Redfern, Dairy Manufacturing Specialist.

Friday

8:30 A. M. Checking Barn Book and Herd Book.
9:30 A. M. How to Average Records and Calculate Records for Nurse Cows.
10:30 A. M. Identification and Tagging Program. Entries on "Register of Animals in Herd", page, DHIA-16.

1:00 P. M. Babcock Testing Practice - Dr. R. B. Redfern, Dairy Manufacturing Specialist.

Saturday

8:30 A. M. Babcock Testing Practice - Dr. R. B. Redfern, Dairy Manufacturing Specialist.

Monday

8:30 A. M. Checking Barn Book and Herd Book.
9:30 A. M. Proved Sire Program and 305 Day Lactation Record.

1:00 P. M. Some Good Dairy Herd Management Practices - George Hyatt, Jr., In Charge, Dairy Extension Office.
2:00 P. M. 305 Day Lactation Records. How to Calculate.
3:00 P. M. Feeding the Dairy Herd - J. D. George, Dairy Extension Specialist.

Tuesday

8:30 A. M. Checking 305 Day Lactation Records and Final Review of Proved Sire Program.
9:30 A. M. Fundamentals of Dairy Cattle Breeding - Dr. J. E. Legates, Professor Dairy Husbandry.
10:30 A. M. Artifical Breeding in North Carolina - T. C. Blalock, Dairy Extension Specialist.

1:00 P. M. Summarizing Records at the End of Testing Year.
2:30 P. M. To Dairy Barn to Test College Herd.

Wednesday

5:00 A. M. To Dairy Barn to Test College Herd and Calculate Barn Book.
11:00 A. M. Summary of Work at Dairy Barn.

1:00 P. M. Checking Yearly Record of Individual Cows, DHIA-780
2:00 P. M. Herd Improvement Registry Testing - Filling Out Forms.

Thursday

8:30 A. M. Checking HIR Testing Problem.
9:30 A. M. Herd Improvement Registry Testing-Rules and Regulations.

1:00 P. M. Advanced Registry Testing (Rules and Regulations).
2:00 P. M. Advanced Registry Testing (Filling out Forms).
3:45 P. M. To Dairy Farm to Identify and Weigh Cows - Review Barn Procedures.

Friday

8:30 A. M. Checking HIR and AR Problems.
9:30 A. M. Owner-Sampler Testing - How It Works.
10:30 A. M. How to Figure Charges for DHIA, HIR, and AR Testing.
11:30 A. M. Review Over all Phases of Testing Work.

1:15 P. M. Examination over Dairy Records.

Saturday

8:30 A. M. Review Herd Books and Examination Papers.
9:30 A. M. How to Get Started and Make Good on the Job.

Exhibit V

DAIRY EXTENSION OFFICE

August, 1955

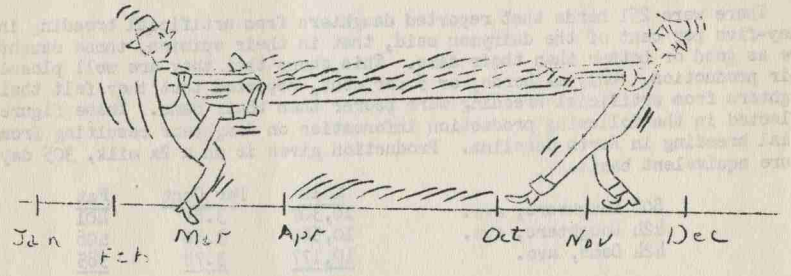
CAN WE GRAZE 300 DAYS A YEAR?

By
Marvin E. Senger
Dairy Extension Specialist

A few will say it can be done but many will shake their head in doubt. Perhaps the dry weather that prevailed throughout North Carolina the past two seasons would make this seem impossible. This has caused the grazing season for many herds to be shortened and, no doubt, discouraging to those trying to establish a suitable pasture program. But it can be done and it is being done on North Carolina dairy farms.

Cows on DHIA test were on pasture an average of 215 days in 1953. In 1954, they were on pasture 221 days. Last year pasture on farms of DHIA members range from none to 365 days. Nine herds had less than 100 days pasture while 29 herds had 300 days or more. It is true that most of the herds with 300 days pasture or more were east of Raleigh but nine of these herds were from Raleigh, west to the mountains.

Russell Oxford, DHIA member in Alexander County, depends heavily on pasture for his herd of Jerseys that averaged 8885 pounds of milk and 489 pounds of butterfat last year. He doesn't only depend on it in the summer but seed small grain for fall and early spring pasture. He gives his pasture a lot of credit for his high production. He says he got the idea from Klondyke Farm, Elkin. Mr. Tom Cooley, manager of Klondyke Farm, has worked out a good fall, winter, and early spring pasture program. He tries to give the Klondyke herd a little pasture each day if at all possible. Manager, Albert Clark of Biltmore Farms has also worked out a year around pasture program. One of their herds on DHIA test was reported as being on pasture 365 days during their last testing year. Mr. E. J. Pfister, Union County DHIA member, had a grazing season last year that provided 353 days pasture for his Brown Swiss herd. High producing cows with plenty of pasture days has helped him to keep his cost of producing milk down.



S-T-R-E-T-C-H YOUR GRAZING SEASON

Any livestock man will tell you that pasture is your cheapest source of nutrients. Dr. R. E. Hodgson, Chief, Dairy Husbandry Research Branch, U.S.D.A., gave some data recently showing that the cost of producing 100 pounds of total digestible nutrients in pasture is only about two-thirds as much as for hay, one-half that for corn silage, and about one-third of that for wheat grain. Since it can be done as far west as the mountains and since it is the cheapest way to feed our cows, let's plan to S-T-R-E-T-C-H our grazing season this year and every year.

Unfortunately we cannot use the same plant the year around for the best growth and pasture yield. We need small grains and crimson clover for fall, winter, and early spring. Ladino Clover and orchard grass are good for late spring, early summer, and early fall. Blue grass also does its best during spring and fall.

Usually these crops will need some help during the summer. Alfalfa and lespedeza may help fill this gap or such annual crops as Sudan grass, millet, and soybeans will provide good summer grazing.

The last of August and first of September is the time to seed for late fall and winter grazing. For these pastures the Agronomony Extension Section, N. C. State College, recommends a mixture of 15 pounds crimson clover, and one bushel each of rye, oats, and barley per acre. Fertilize with 400 pounds of 8-8-8 or any complete fertilizer high in nitrogen. Top dress with 15 to 30 pounds of nitrogen in the fall and again when growth starts in February.

This supplemental grazing will help avoid over-grazing permanent pasture and give them a chance to get off with a good start next spring. If permanent pastures are wearing out, you can boost pasture yield up to 35 per cent by renovation. Most pastures will respond well to fertilizations. Feed them for increased yield.

Your county agent can give you further help on a year around pasture program. Talk it over with him the next chance you get.

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DHIA HERDS TAKE ADVANTAGE OF ARTIFICIAL BREEDING

By
T. C. Blalock
Extension Dairy Specialist

A recent survey among herds doing DHIA testing in North Carolina shows that an extremely high percentage of them are taking advantage of the artificial breeding program as a means of improving their herds. Of the 427 herds covered in the survey, the DHIA testers reported that 322 of them - 75 per cent - were using some artificial breeding. Thirty-one per cent or almost one-third were breeding all their cows artificially. Another 18 per cent breed most of their cows artificially making a total of 49 per cent that breed most or all of their herd the artificial way.

There were 251 herds that reported daughters from artificial breeding in milk. Niney-five per cent of the dairymen said, that in their opinion, these daughters were as good or better than their dams. This shows that they are well pleased with their production. Only 11 herds, or 5 per cent, reported that they felt their daughters from artificial breeding were poorer than their dams. These figures are reflected in the following production information on daughters resulting from artificial breeding in North Carolina. Production given is on a 2x milk, 305 day, mature equivalent basis.

	Milk	Per Cent	Fat
800 Daughters, ave.	10,307	3.89	401
424 Daughters, ave.	10,580	3.86	408
424 Dams, ave.	10,177	3.78	385
Difference	+403	+.08	+23

The quality of bulls available through your local artificial breeding association is the best ever. Following are daughter averages (2x milking; 305 days; mature Equivalent) on bulls now in the stud:

	No. Daus.	Milk	Per Cent	Fat
Guernsey	16	10,110	4.8	499
Holstein	12	15,485	3.7	577
Jersey	12	10,128	5.2	526

A new folder has just been issued which contains pictures and proofs of all the bulls now in service. Your technician has a supply so why not call him and have him bring one out?

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EXHIBIT FORAGE CROPS AT THE STATE FAIR

By

S. H. Dobson, Agronomy Extension Specialist

State Fair time is just around the corner. In making your dairy cattle exhibits how about bringing along a sample of your forage. You should be as proud of your feed as you are your animals - certainly, it takes good feed to produce good cattle. We need to encourage good feed production and preservation.

The prizes are good - entries and prizes are as follows:

1. Sweepstakes: - an exhibit of sod, silage, and hay. Each entry here is also eligible for class prizes.

1st	2nd	3rd	4th	5th	6th
$50.00	$35.00	$25.00	$15.00	$10.00	$5.00

2. Pasture sod: 18" x 18" in waterproof tray or pan.

	1st	2nd	3rd
(1) Ladino clover - with or without grass -	$15.00	$10.00	$5.00
(2) Any other perennial sod -	$15.00	$10.00	$5.00

3. Silage (1 gallon in sealed container) -

(1) Pasture and hay crop (long or chopped)	$10.00	$ 7.50	$5.00
(2) Corn silage -	$10.00	$ 7.50	$5.00

4. Hay : 12" plug from bale or minature bale 18" x 18" x 12"

(1) Alfalfa	$10.00	$ 7.50	$5.00
(2) Lespedeza	$10.00	$ 7.50	$5.00
(3) Clover grass mixed	$10.00	$ 7.50	$5.00

* * * * * * *

In a recent USDA labor study several interesting and startling facts were observed. Since the start of World War II farm wages have quadrupled. Labor requirements for livestock production have been cut only 7 per cent during this period while crop labor requirements were cut 34 per cent. Livestock now takes 40 per cent of all farm labor.

Among livestock the milk cow is the big labor user. It takes an average of 61.7 man hours to produce $100 worth of milk. Other man-hour requirements per $100 of product are:

45.0 man-hours for laying and replacement chickens
11.9 man-hours for centralized and mechanized broiler production
26.8 man-hours for sheep
23.8 man-hours for turkeys
15.9 man-hours for hogs
15.8 man-hours for beef cattle

Dairying also heads the list in labor required per animal per year. This study showed that it took 140 man-hours for a hand milked cow but 20 per cent less - 111 hours - for cows milked by machine.

From Agricultural Research U.S.D.A., July,1955

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PROVED-SIRE REPORT - July, 1955

During July, eleven proved-sire reports were received from the Dairy Husbandry Research Branch, Washington, D. C. Eight of these have less than ten daughter-dam pairs and are designated as preliminary proved-sire reports. This makes a total of ninety-five proved-sire reports received in 1955. Copies of these reports have been sent to owners of these bulls if in North Carolina or to the DHIA herd having the most daughters in the proved-sire report. Since other DHIA herds in North Carolina may have one or more daughters included in some of these reports, a summary of each proved-sire report received during July is given. Bulls known to be alive are starred (*).

AYRSHIRE		No. Records	Milk	Test	Fat
Strathglass Laird's Vernon 92943	7 dau.	9	11,116	4.1	451
Preliminary proof, 7-15-55	7 dams	33	9,881	4.2	412
Born, 3-14-48; sire, 65215; dam, 213663	Difference		+1,235	-.1	+39
Used by North Carolina Sanatorium, McCain, N.C.					
HOLSTEIN					
Beallgray Progressor Ace 1070579	9 dau.	15	12,934	3.4	443
Preliminary proof, 7-29-55	7 dau.	10	13,176	3.5	456
Born, 3-23-46; sire, 854531; dam, 2474535	7 dams	13	12,537	3.8	473
Used by C. E. Graham, Linwood, N. C.	Difference		+639	-.3	-17
Gamehill Jumbo Tiny 1066395	7 dau.	8	9,577	3.6	349
Preliminary proof, 7-25-55	6 dau.	7	9,793	3.7	361
Born, 2-18-49; sire, 971608; dam, 2544370	6 dams	24	11,279	3.5	400
Used by L. C. Ross, Greensboro, N. C.	Difference		-1,486	+.2	-39
Grassy Meadows Emperor Veeman 1011810	6 dau.	11	12,062	3.8	455
Preliminary proof, 7-5-55	5 dau.	10	12,094	3.8	462
Born, 12-12-46; sire, 953967; dam, 2464277	5 dams	13	11,103	3.4	381
Used by Teer Brothers, Chapel Hill, N. C.	Difference		+991	+.4	+81
Modelyne Ideal Trailblazer 1097024	11 dau.	15	12,010	3.6	435
Preliminary proof, 7-25-55	7 dau.	10	11,942	3.5	421
Born, 3-3-47; sire, 854210; dam, 2139945	7 dams	9	10,804	3.6	388
Used by J. I. Stryker, Neshanic, N. J.	Difference		+1,138	-.1	+33
Rosni Conqueror Sensation 1001895	11 dau.	18	13,623	3.5	475
Preliminary proof, 7-15-55	5 dau.	8	13,886	3.6	496
Born, 2-23-47; sire, 81[illegible]473; dam, 2221591	5 dams	17	14,172	3.3	472
Used by R. P. Rodes, Lexington, Va.	Difference		-286	+.3	+24
Usnad Top Row Pride 943042	24 dau.	44	11,081	3.6	394
Born, 2-19-45; proved, 7-15-55	15 dau.	26	10,889	3.6	392
Sire, 772722; dam, 2271568	15 dams	32	11,521	3.4	395
Used by U. S. Naval Academy Dairy, Gambrills, Md.	Difference		-632	+.2	-3
JERSEY					
Biltmore Ivy Basileus 469759	10 dau.	13	6,287	5.3	332
Preliminary proof, 7-5-55	6 dau.	8	6,623	5.1	338
Born, 1-15-45; sire, 400236; dam, 1157892	6 dams	15	7,131	5.0	358
Used by E. L. Moose, Conover, N. C.	Difference		-508	+.1	-20

Jersey proved-sire reports cont'd.

Catawba Basil Hero 531725	7 dau.	7	7,547	5.0	374
Preliminary proof, 7-13-55	7 dams	25	7,381	5.1	378
Born, 3-1-49; sire, 495169; dam, 1581841	Difference		⁄166	-.1	-4
Used by V. O. Sipe Farms, Conover, N. C.					
Louisoxford Jester 532653 *	10 dau.	12	6,709	5.5	370
Born, 9-25-48; proved, 7-29-55	10 dams	33	8,158	5.3	431
Sire, 477876; dam, 1458713	Difference		-1,449	⁄.2	-61
Used by H. T. Watkins, Blanche, N. C.					
Louisoxford Standesign 528164	10 dau.	13	6,130	5.0	307
Born, 4-11-48; proved, 7-28-55	10 dams	21	7,450	4.9	363
Sire, 466561; dam, 1477829	Difference		-1,320	⁄.1	-56
Used by P. H. W. Jackson, Rutherfordton, N.C.					

* * * * * * *

CALENDAR OF DAIRY EVENTS

August 29 to September 10 - DHIA Testers' Training Course, N. C. State College, Raleigh, N. C.

September 7 - N. C. Holstein Breeders Sale, Agricultural Center, Greensboro, N. C.

September 7 - N. C. Jersey Breeders Sale, Iredell County Fair Grounds, Statesville, N. C.

September 12 to 17 - Artificial Breeding Technicians Short Course, Animal Industry Department, N. C. State College, Raleigh, N. C.

September 15 - State Institutional Holstein Sale, State Fair Grounds, Raleigh, N. C.

October 3 and 4 - DHIA Supervisors' Conference, Eastern Group, N. C. State College, Raleigh, N. C.

October 5 and 6 - DHIA Supervisors' Conference, Western Group, Marion, N. C.

Dairy Cattle Judging - N. C. State Fair

October 18 - Junior Dairy Show - Dr. D. W. Colvard, Dean of Agriculture, N. C. State College, Judge.
October 19 - Holstein Judging - Mr. Richard N. Wills, Farm Manager, McDonogh School, McDonogh, Maryland, Judge.
October 19 - Jersey Judging - Mr. Hilton Baynton, Extension Dairyman, University of New Hampshire, Durham, New Hampshire, Judge.
October 20 - Ayrshire Judging - Mr. Richard N. Wills, Judge.
October 20 - Guernsey Judging - Mr. Hilton Baynton, Judge.

District Junior Dairy Shows - 1955

September 2	Statesville	September 15	New Bern
September 9	Greensboro	September 16	Wilmington
September 9	West Jefferson	September 27	Asheville
September 14	Rocky Mount	September 27	Murphy

* * * * * *

HIR AND AR RECORDS

Summary of Official Testing
July 1955

	Advanced Registry		Herd Improvement Registry	
	No. Herds	No. Cows	No. Herds	No. Cows
Ayrshire	0	0	14	501
Guernsey	19	400	21	1107
Holstein	1	6	34	1130
Jersey	2	109	26	1106
Goats	0	0	2	74
Totals	22	515	97	3918

Lactation Records Completed

Cows completing AR and HIR records with 450 pounds of butterfat or more on 305 day, 2x milking, mature equivalent basis. Actual production is listed. (*) indicates AR record.

Owner Cow's Name	Age	Times Milked	No. Days	Lbs. Milk	Lbs. Fat
GUERNSEY					
Brown, A. L., Concord					
Milton Farms Master Constance	2-7	3x	365C	12110	659*
Clear Springs Majesty's Pride	3-4	3x	365	12204	634*
Chatham, Thurmond, Elkin					
Klondike Premost Jewell	4-6	3x	365	14761	721*
Klondike Premost Actress	2-8	3x	365	12944	640*
Coble, George S., Lexington					
Maegeo Maxim's Lola	3-5	3x	365	14417	711*
Maegeo Jollyann	4-2	3x	305C	10983	539*
Maegeo Leader's Prettymaid	3-5	2x	305C	9133	479*
Maegeo Apple's Beauty	2-6	2x	305C	9028	453*
Maegeo Leader's Blossom	2-2	2x	305	9707	432*
Maegeo Dynamo's Lucky Lady	2-2	2x	305C	9464	441*
Fowler, O. T., Pfafftown					
Grand View Predictor's Annie	4-9	3x	365	14306	719*
Grand View Majestic's Cherry	3-5	3x	365	12575	640*
Henderson, C. H., Jr., Tarboro					
Woodvale Leader's Jessie	4-8	2x	305	9709	485*
Kimberly, John R., Tryon					
Eskdale Baron's Wanda	2-4	2x	305	8281	383*
Osborne, Florence, Canton					
Garden Creek Heidi	2-3	2x	365	10338	487*
Shore, Marie M., Winston-Salem					
Shore Farm Crystal Gem	4-5	3x	365C	10467	527*
Sikes, T. Edgar, Greensboro					
Sikco Maxim's Juda	5-2	2x	365	9963	579
Noble Dean's Kathy	4-11	2x	305C	11301	541
Sikco M. Maxim's Girl	6-4	2x	305C	9457	512
Slagle, A. B., Franklin					
Belmont View Fashion's Tiara	6-0	2x	305C	11590	553*
Belmont View Brilliant's Chic	4-5	2x	305C	9903	482*

GUERNSEY'S cont'd.

Slagle, A. B., Franklin					
Springhill Ace's Dawn	4-5	2x	365	9066	480*
Snarr, Ward, Siler City					
Wardhaven Rose Taurine	10-7	2x	305C	9206	467
Stokes, E. S., Linwood					
Crescent May Blossom	2-7	2x	305C	8145	401*
Voss, Emma Elizabeth, Belew Creek					
Kite's Daisetta	9-10	2x	365	12916	494

HOLSTEIN

Appalachian St. Teachers College, Boone					
Appalachian Clothilde Fayne	9-4	2x	305	14515	487.1
Bowles, Louis G., Statesville					
Mina Ormsby Korndyke	4-4	2x	305	12962	448.7
Cedar Lodge Dairy, Thomasville					
Bess Rosni Hale Ashley Abigail	6-0	2x	305	14151	472.6
Inez Ormsby Prilly Darta	3-4	2x	305	11411	403.6
Cummings, David C., Guilford College					
Butterfield Ormsby Lola	3-7	2x	303	15697	637.6
Butterfield Inspiration Nora	4-3	2x	298	12788	505.8
B O N C Vivian Jolan	9-8	2x	305	15198	495.1
Cummings, J. W. & Sons, Guilford College					
Janill Empress Kol	4-8	2x	305	12791	450.2
Forsyth County Farm, Winston-Salem					
Butterfield Ormsby Echo	3-11	2x	305	13023	440.9
Forsyth King Bessie 2D	2-11	2x	305	11102	396.9
Forsyth Model Korndyke Segis	2-3	2x	305	10184	372.9
N. C. State College, Raleigh					
North Carolina Chief Actress	3-8	2x	305	10993	441.7
Sutherland, William, Fayetteville					
Cottonade Amy	8-7	2x	305	15284	477.6

* * * * * *

Some studies on animal-behavior at the USDA Dairy Field Station, Jeanerette, Louisiana, indicate that milk and butterfat production can drop off as much as 5 per cent when a totally strange cow is suddenly added to a well-established herd.

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Southwestern #1 DHIA voted to change their name to the Pisgah DHIA. It will be listed by its new name in the Dairy Extension News. Mr. John McLean is president of this association and Mr. Harry Lutz is their tester.

* * * * * *

There were an estimated 365,000 milk cows on farms in the state during July --12,000 fewer than in July 1954. The average production per cow last month was 436 pounds, the highest of record for July since 1949.

From N. C. Farm Report, August, 1955

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Cows bred in September will freshen June 10 to July 9, while cows bred in November will freshen August 10 to September 8. Breed for fall freshening.

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D. H. I. A. TESTING
Association Summaries For July, 1955
Taken From DHIA Supervisors' Monthly Reports

ASSOCIATION	TESTER	NO. HERDS	TOTAL COWS	% DRY COWS	AV. MILK	AV. FAT	FEED COST PER 100 LBS. MILK	NO. 305 DAY CARDS REP'D
Alamance	B. Martin	7	403	29.8	439	18.3	2.83	26
Alexander	L. Payne	5	85	21.2	569	28.0	2.18	12
Buncombe	T. Burleson	14	426	26.1	545	23.0	3.10	23
Burke-Caldwell	K. Sims	18	485	22.9	565	27.4	2.20	21
Capital 1	G. E. Hager	8	311	21.9	634	31.8	2.51	19
Capital 2	C. Rambeau	16	626	23.6	616	22.9	2.33	95
Catawba 1	J. Wilkinson	24	714	26.1	476	20.3	2.47	0
Cleveland	J. Hunt	15	432	21.8	557	23.0	1.97	35
Cumberland	W. Sloan	17	564	30.0	613	22.7	2.75	37
Davidson	T. Ward	14	463	20.1	676	25.4	2.32	100
Davie	E. Greble	9	239	35.1	533	22.0	3.01	14
East Central	H. B. Wilkie	19	821	26.8	697	24.8	2.97	0
Forsyth	E. Greble	24	550	21.6	652	24.5	2.62	25
Golden Belt	M. Hughes	13	408	26.0	673	24.5	2.13	7
Guilford 1	R. Siler	17	540	28.3	568	22.6	3.22	59
Guilford 2	E. Harrison	24	962	26.0	629	24.6	2.90	88
Iredell	T. C. Henderson	14	443	22.3	597	22.5	2.63	44
Lincoln	W. Dellinger	13	309	23.3	476	20.5	2.64	4
Macon	J. C. Williams	8	147	19.0	717	28.6	1.63	0
McDowell	R. Duncan	5	70	25.7	523	21.4	1.94	7
N. Eastern	D. Brown	20	704	25.7	576	22.9	2.11	11
N. Western	E. Moretz	5	125	28.8	549	21.2	1.84	11
Orange-Chatham	G. Reynolds	27	945	28.5	571	22.8	2.68	0
Piedmont 2	M. Black	10	384	28.6	465	21.4	2.73	11
Piedmont 6	K. Williams	11	291	28.5	530	21.5	2.43	38
Piedmont 9	T. S. Sloan	9	277	26.7	483	20.4	2.28	0
Pisgah	H. K. Lutz	19	738	22.6	691	27.3	2.62	10
Randolph	C. Glass	21	794	25.2	653	25.3	2.42	66
S. Eastern	E. Rivenbark	23	738	23.4	639	24.5	2.33	0
S. Western 2	T. Burleson	8	255	22.7	588	25.8	2.42	3
S. Western 3	W. P. Walker	11	320	22.5	625	28.3	2.26	30
S. Western 4	C. R. Nichols	15	667	21.6	641	24.5	2.82	62
State Institutions	R. Bryant	9	700	16.4	946	33.6	2.13	0
Tri-County	C. Burleson	16	565	28.3	586	23.7	2.30	0
Yadkin	H. Fleming	12	295	25.8	563	24.0	2.69	21
Miscellaneous	McCall	1	44	27.1	645	26.6	2.68	6
Total		501	16810	24.9	611	24.3	2.52	885

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OWNER-SAMPLER TESTING
July 1955

Sponsored By	No. Herds	No. Cows
Alamance	1	27
Cleveland DHIA	1	28
Iredell DHIA	3	47
Lincoln DHIA	1	25
Long Meadow Farm Dairy	19	406
Total	25	533

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TWELVE HIGH HERDS FOR AVERAGE BUTTERFAT PRODUCTION IN DHIA, JULY, 1955
INCLUDES HERDS CONSISTING OF TEN COWS OR MORE

ASSOCIATION	OWNER	BREED	TOTAL COWS	COWS DRY	AV. MILK	AV. B'FAT
Southwestern 3	Shoal Falls Farm,Inc.	RG	38	7	849	45.5
Southwestern 2	Mt. Experiment Station	RJ&RG	41	3	774	42.9
State Institutions	State Hospital,Raleigh	H	101	8	1182	41.3*
Northeastern	Ray Mayne	RJ	52	10	861	41.2
Capital 1	Hillandale Farm	RG	58	8	800	41.2*
Macon	Charles S. Slagle	GH	33	2	1014	41.1
Southwestern 1	A. W. Nesbitt	H	17	5	1138	39.8
Southeastern	Costal Plain Station	RJ	31	4	771	39.8
State Institutions	St. Hospital,Goldsboro	H	115	17	1203	39.6
Capital 1	Croasdaile Farm	RG	56	5	753	39.6*
Burke-Caldwell	J. S. Anderson	RH&GM	18	2	1040	39.1
State Institutions	Caswell Training School, Kinston	H	111	13	1065	38.8

* Part or All Cows 3x Milking

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DHIA HONOR ROLL HERDS

Includes DHIA Herds That Average 350 Pounds of Butterfat or More Per Cow Per Year. Taken From Yearly Herd Reports Sent In By DHIA Supervisors For July, 1955

ASSOCIATION Owner and Address	Breed	Cow Years	Av. Lbs. Milk	Av. Lbs. B'Fat	Test Yr. Ended
Capital 1					
I. H. Terry and Lawrence Brandon, Bahama	Mix	20.0	9836	423	7- 2-55
Hillandale Farm, Durham	RG	61.2	7404	403	6- 2-55
Capital 2					
J. R. Nipper and Sons, Raleigh	RH	79.6	11518	384	5-30-55
Pine State Creamery, Cary	RG & GG	68.9	7860	384	4- 9-55
Golden Belt					
Green Acres Dairy, Colerain	Mix	36.3	12084	436	7-23-55
Caledonia Prison Farm, Halifax	Mix	21.7	9880	376	3-19-55
Leland Kitchen, Scotland Neck	H	41.0	9971	360	6-29-55
Guilford 2					
Mrs. T. E. Smith, McLeansville	G & H	17.0	8534	353	5-29-55
Northeastern					
Ray Mayne, Washington	RJ	45.4	9834	503	5-11-55
William H. Brake, Rocky Mount	GH	27.7	10136	406	5- 3-55
Piedmont 6					
J.Dwight Starnes, Waxhaw	Mix	25.5	9175	386	5-31-55
Paschal Clontz, Indian Trail	Mix	17.9	7532	363	6-22-55
Southwestern 1					
H. K. Key, Horse Shoe	RH	35.7	12936	468	5-12-55
A. S. Browning, Jr., Hendersonville	RH & GH	37.2	10028	354	5- 4-55
State Institutions					
N. C. School For Blind and Deaf, Raleigh	RH	31.9	10910	419	6-16-55
N. C. School For Deaf, Morganton	RH	32.6	11414	404	7- 4-55
Tri-County					
N. C. Sanatorium, McCain	RA	68.7	8177	351	5-31-55
Miscellaneous					
Wade W. Files, Blanch	H	27.0	10372	386	5- 8-55

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DHIA LACTATION RECORDS

305-Day Lactation Records From DHIA Supervisors' July Reports

For Cows Producing 450 Pounds B'fat Or More On 2x Milking, Mature Equivalent Basis Actual Production Is Given.(A) Indicates Daughter of Artificial Breeding.(*) Indicates 3x Milking.

ASSOCIATION	OWNER & ADDRESS Cow's Name	COW IDENTIFICATION	BREED	AGE	LBS. MILK	LBS. FAT
Alamance						
	Frank Lindley, Snow Camp	455976	RA	2-6	9220	391A
	Thomas R. McPherson, Mebane	979332	RG	8-6	8590	458
Alexander						
	Russell Oxford, Taylorsville	1794019	RJ	4-2	11130	601
	" " "	1415856	RJ	11-0	9650	540
	" " "	1823464	RJ	1-3	10740	531
	" " "	1823461	RJ	3-8	8710	529
	" " "	1823460	RJ	3-5	7640	495
	" " "	1823463	RJ	3-2	8260	482
	" " "	1617200	RJ	6-9	9090	475
	" " "	1415855	RJ	11-3	9390	469
	" " "	1952389	RJ	2-3	8070	450
	" " "	1771221	RJ	4-2	7330	437
	" " "	1881959	RJ	2-4	8220	405
	" " "	1952390	RJ	2-1	8180	376A
Buncombe						
	Biltmore Guernseys, Biltmore					
	Milton Farms Mopi Adora	1211632	RG	5-0	8760	450
	Southern Dairies, Inc., Asheville					
	Valkyrie Milton's Miss	1308622	RG	3-9	10930	587
	Valkyrie Tar Heel Nellie	1035165	RG	9-11	10140	471
	Valkyrie Lucky Clarabelle	1171848	RG	5-3	8290	467
	Southern Dairies, Inc., Asheville	1368412	RG	3-2	9210	442
	" " " "	1238351	RG	4-7	8090	438
	" " " "	1408290	RG	2-9	8170	413
	Warren Wilson College, Swannanoa					
	Wilcoll Maude Wayne Alma	3377943	RH	3-10	11610	508
	Warren Wilson College, Swannanoa	3516867	RH	2-8	11850	427A
Burke-Caldwell						
	D. L. Draughon, Morganton	1119284	RG	6-3	9450	452
	G. B. Triplett, Lenoir	800432	RG	10-11	9210	460
Capital 1						
	Dr. H. C. Carr, University					
	Guernsdel Princess Fern	997629	RG	7-7	16040	712*
	Girl's Fancy of Chilbrook	1426951	RG	3-9	11400	627*
	McPherson Farms Ray Katie	1313800	RG	3-8	10670	573*
	Guernsdel Maxim Eunice	1345124	RG	3-2	10070	492*
	Guernsdel Maxim Debra	1421276	RG	2-6	9260	487*
	Guernsdel Princess Geneva	1459080	RG	2-2	9390	474*
	Guernsdel Maxim Angie	1436769	RG	2-5	9330	470*
Capital 2						
	C. S. Dunn and Sons, Spring Hope	3234152	RH	4-4	11800	472
	" " " " "	2851473	RH	7-2	13020	467
	" " " " "	3240547	RH	4-7	13030	454A
	" " " " "	3662425	RH	2-6	10640	378
	W. W. Holding, Wake Forest	3314156	RH	3-8	11870	436
	" " " "	55-A3620	GH	3-2	10630	423
	" " " "	3498140	RH	2-6	11290	377
	K. R. Myatt, Raleigh	1909633	RJ	2-3	8980	361
	J. C. Peed, Creedmoor	2707610	RH	8-5	14370	511
	" " "	2830311	RH	7-1	14240	483

Capital 2 Cont'd					
Pine State Creamery, Cary	1157437	RG	5-9	9640	450
" " " "	1439258	RG	2-7	7200	432
" " " "	1367368	RG	2-9	7240	379
John H. Pope, Raleigh	3436488	RH	2-11	11580	402A
" " "	3460322	RH	3-0	10540	383
" " "	3717513	RH	2-1	11050	365A
Cleveland					
Charles Hobert Beam, Lawndale	55-7530	GH	2-6	13070	452
" " " "	55-7539	GJ	4-4	8720	438
" " " "	55-7554	GH	3-0	10080	386
Cumberland					
E. C. Cooper and Son, Fayetteville	55-A1433	GH	15-9	10320	384
Cottonade Farm, Fayetteville	3236853	RH	4-3	12610	505
" " "	3274631	RH	4-9	11270	456
" " "	2753643	RH	7-1	11060	456
" " "	2146876	RH	14-4	12550	422
" " "	55-A2252	GH	2-3	10650	385
Gardner Brothers, Wade	55-A2156	GH	8-6	16150	533
Davidson					
Baptist Orphanage, Thomasville					
Bertie	3232385	RH	6-1	14780	515
Lilly	2339653	RH	12-5	15120	495
Olga	2645348	RH	8-7	12460	491
Addie	3229799	RH	4-10	13960	483
Minnie	3037508	RH	7-1	12280	475
May	3068658	RH	5-9	13670	471
Segis	2698368	RH	8-1	14470	464
Jane	3490067	RH	2-10	12390	447A
Mabel	3490065	RH	2-9	12280	442
Beach	3339328	RH	3-8	12480	425
Direct	3490066	RH	2-7	11530	414
Vivian	3339323	RH	3-9	11990	410
Maggie	3460056	RH	2-10	10580	376
Milly	3490062	RH	2-6	10970	373
L. R. Coltrane, Lexington					
Sally	N.C.-3409	GG	7-9	9580	478
C 22	1362264	RG	4-9	8870	463
C 44	55A-4711	GG	3-7	7670	440
C 65	1459165	RG	2-4	8020	360
Doak Finch, Trinity					
Echo	2356469	RH	12-0	16600	567
C. E. Graham, Linwood					
Walker	2637909	RH	8-9	14940	540
Spot Horn	3114174	RH	5-2	11740	472
Virginia	2842273	RH	7-6	11840	467
Penn Heifer	3305136	RH	3-7	13140	421
Robert L. Hill, Lexington					
Peggy	3192609	RH	8-10	11100	463
Ella Mae	3870792	RH	1-10	8750	398
Daisy III	3768720	RH	1-11	9280	345
Davie					
Fred F. Bahnson, Mocksville					
Win-Mock Creamella Segis	3327307	RH	3-11	14370	511
Win-Mock Beautina	3462658	RH	2-6	12880	504
Win-Mock Farm Maid	3254127	RH	6-9	11900	483
Win-Mock Aggie Burke	3306204	RH	2-10	12950	475
Win-Mock Sadie Piebe	3407446	RH	3-1	11790	468
Fred F. Bahnson, Mocksville	3574317	RH	1-11	9070	385A
L. S. Bowden and E. E. Wolf, Advance					
Colantha Ormsby Burke Pontiac	3332154	RH	3-11	13070	439

Davie Cont'd					
C. A. Street, Jr., Advance					
Whitie	55-A6826	GH	3-0	11550	474
Precious Gem II	236775	RBS	3-11	11890	454
Forsyth					
Dr. E. H. Reich, Winston-Salem					
Sink	55-A6999	GH	6-3	10880	451
Sallykirk Maid (Lois)	3274636	RH	4-7	12080	438
Boles	55-A2526	GH	2-9	10930	407
Dr. E. H. Reich, Winston-Salem	55-A7000	GH	2-0	8870	344
Golden Belt					
Oxford Orphanage, Oxford	3555152	RH	2-3	9320	364
Guilford 1					
J. W. Cummings and Son	3156612	RH	4-9	14210	551
" " " "	3044271	H	4-9	13410	493
" " " "	2955833	H	6-7	13246	489
" " " "	3156614	RH	4-9	12750	483
" " " "	3189611	RH	4-8	13260	454
William E. Cummings, Summerfield	55-9678	J&H	6-0	13060	495
" " " "	55-9707	GH	5-8	14260	490
" " " "	55-9680	H&J	6-2	11800	463
" " " "	55-9684	GH	3-11	11550	463
L. B. Gallimore, Guilford	55-9683	GH	4-0	11470	455
" " "	1243328	G	4-8	10040	491*
T. G. Kivett, Jamestown	1426687	G	2-7	7318	379*
" " "	3440380	H	2-9	12650	491
" " "	3160338	H	5-2	13330	456
" " "	3271451	H	4-8	12760	433
" " "	3533731	H	2-6	11570	397A
Guilford 2					
Dr. C. I. Carlson, Guilford College					
Constance	1222848	RG	4-11	9730	544
Lady Alene	920096	RG	9-0	10080	525
Cena	1139062	RG	5-10	9890	506
Norma	1274638	RG	4-0	8080	480
Linda	1068923	RG	6-11	7900	460
Alicia	1184255	RG	4-11	8960	457
Matilda	957825	RG	8-7	7920	453
Alma	1157943	RG	5-4	7760	451
Dr. C. I. Carlson, Guilford College	1441184	RG	2-8	8260	441
" " " " "	857723	RG	10-2	7660	419
W. D. Coble, Guilford College					
No. 34	2764463	RH	7-11	14470	515
No. 64	3171133	RH	5-7	13230	489A
No. 54	3075870	RH	6-0	11950	470
David Cummings, Guilford College					
Kate	3189609	RH	5-10	15130	509
Flossie	3287818	RH	4-1	12340	479
C. W. Pemberton, Greensboro					
Buttercup	55-6592	GH	6-8	13220	450
Franklin Teague, Elon College					
Donnie	55-A7249	GH	3-3	14150	516
Charles and Bruce Turner, Reidsville	1304294	RG	3-8	8340	430A
Iredell					
Louis G. Bowles, Statesville	3573480	RH	2-1	9510	360
Frank Hemrick, Union Grove					
Lady Bessie Creamelle Inka	3178018	RH	1-9	14150	503A
Ormsby Pietertze Segis	3144665	RH	4-11	13960	487A
Mechthilde Fobes Bessie	3315744	RH	3-7	11510	450A
Echo Cottonade Banostine	3384825	RH	3-3	12520	422A

Iredell Cont'd					
H. C. Myers, Jr., Union Grove					
Fobes Della Pride	3547878	RH	3-1	11160	478A
Ormsby Butterfield Alcartia	3715641	RH	2-6	9960	408
Ralph Shuford, Statesville	862846	RA	2-1	8480	366
J. A. Thomasson, Hamptonville	3563399	RH	1-9	10140	346A
McDowell					
E. B. Wright, Marion	990984	RG	7-1	9700	461
Northeastern					
William H. Brake, Rocky Mount	NC-4152	GJ	5-9	13660	527
Spain and Coggins, Greenville	NC-3330	GJ	2-6	7630	389
Piedmont 2					
D. M. King, Charlotte	1828312	RJ	3-10	8510	440
Piedmont 6					
Breezy Hill Dairy, Monroe	1743556	RJ	5-0	7760	457
E. J. Pfister, Waxhaw	230895	RBS	6-0	12880	466
J. Dwight Starnes, Waxhaw					
Red	55A5714	GG	4-4	9960	466A
Cull	55A5709	GG	3-10	12660	429A
Randolph					
S. A. Lowe and North Briles, Asheboro	1847270	RJ	3-1	7110	401A
W. G. Coble, Asheboro	1841517	RJ	3-5	7940	432
Noble Dream Prince Beauty	1869696	RJ	3-1	7870	414
Advancer Louisoxford Janet-	1961718	RJ	1-11	6510	375
Advancer Louisoxford Laura	1961714	RJ	2-1	6600	361
R. E. Cummings, Asheboro	3491919	RH	7-4	16170	544
Glenn Lowe, Asheboro					
" " "	1141702	RG	6-0	8750	453
" " "	865877	RG	10-0	8540	435
" " "	1474434	RG	1-10	7770	374
Floyd Steed, High Point	C-445869	GH	5-5	13020	500
" " "	D-177306	GH	3-6	13050	499
" " "	K-171281	GH	5-0	14210	492
" " "	D-177303	GH	4-6	11780	478
" " "	55-A0001	GH	5-9	12940	452
W. J. Wright, Siler City					
Hillcrest Trixie	1869091	RJ	2-6	7900	465A
W. J. Wright, Siler City	1771930	RJ	4-4	8710	462A
Southwestern 3					
Mountain Experiment Station, Waynesville					
Mountain D. Royal Sola	1871876	RJ	2-8	7050	424
Shoal Falls Farm, Inc., Hendersonville					
Shoal Falls Compliment's Reba	990778	RG	7-8	12080	657
Southwestern 4					
Hoover's Dairy, Crouse	55-A4434	GH	6-9	11260	471
Robert J. Hunter, Harris	55-A6524	GH	2-7	11640	422
C. F. Johnson, Hendersonville	3624499	RH	3-10	13110	513
John R. Kimberly, Tryon	887369	RG	10-0	9500	485
" " "	1240865	RG	4-9	9300	457
Walden Weaver, Besemer City	55-A5992	GH	4-0	12760	425
" " "	55-A0790	GH	1-11	8460	360
Yadkin					
W. T. Allen and Sons, Hamptonville	3502520	RH	3-3	14950	568
" " " "	3394324	RH	3-3	11290	422
George L. Harrison, Yadkinville	55A1880	GH	3-5	8440	405A
Reece Brothers, Boonville	985573	RG	7-10	11360	483
D. M. and L. F. Thomasson, Hamptonville	2966351	RH	7-0	15630	545
Miscellaneous					
Wade M. Files, Blanch	AK-4979	GH	2-9	11635	441A
" " " "	AK-4987	GH	2-8	10738	427A
" " " "	AK-4981	GH	2-11	10615	383

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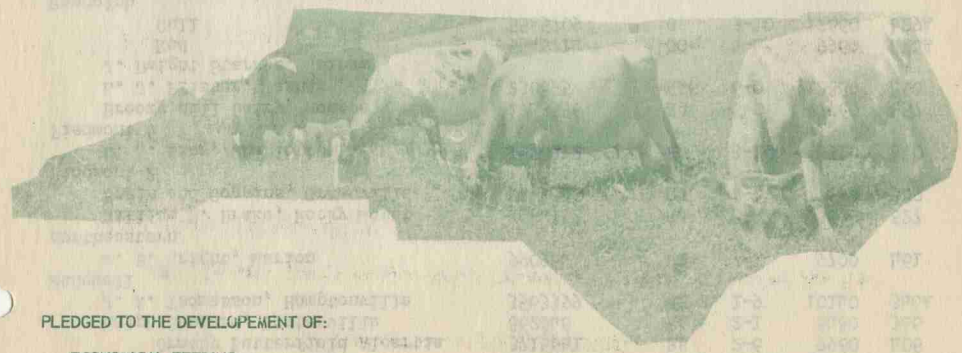


PLEDGED TO THE DEVELOPEMENT OF:

ECONOMICAL FEEDING
HIGH PRODUCING COWS
EVALUATING SIRES
EFFICIENT HERD MANAGEMENT

COMPILED FROM SUPERVISORS' REPORTS BY
DAIRY EXTENSION OFFICE, N. C. STATE COLLEGE, RALEIGH, N. C.
MARVIN E. SENGER, EXTENSION DAIRY SPECIALIST, EDITOR

PROJECT III - JUNIOR DAIRY PROGRAM

An important phase of the Dairy Extension Program is that of the 4-H Dairy work. The objectives of this program are:

1. To stimulate interest in the dairy animal among 4-H Club members.
2. To train those 4-H members who choose dairying as a project in sound dairy principles.

County Extension workers administer this program; and thus the work of the Dairy Extension Staff is along the lines of providing assistance and training for county workers.

J. D. George, Dairy Extension Specialist, has devoted about two-thirds of his time to this work. His efforts have been directed toward the preparation of teaching aids for agents' use, and also he has served as a coordinator for District 4-H Dairy events such as shows, judging contests, demonstration contests, etc. A special effort was made to improve the 4-H Dairy Program in the Western District. This was done through office conferences with agents in most of counties in that District.

The 4-H Dairy Program involves five major fields of activity. They are: (1) 4-H Dairy Production Project, (2) 4-H Dairy Demonstration Program, (3) 4-H Dairy Judging Program, (4) Junior Dairy Show Program, (5) 4-H Dairy Calf Placement.

The 4-H Dairy Production Project

Although participation in this project did not show the anticipated growth that was planned during 1955, the quality of work done by the 175 members in approximately 30 counties was outstanding.

In this project 4-H members with dairy animals in production keep production and feed records similar to the DHIA program. The member makes a monthly report to his agent which facilitates close supervision. This

feature, along with the nature of the project, makes it one of the outstanding training phases of 4-H Dairy work.

County winning records from fifteen counties were submitted for state awards. Winners and awards were as follows:

Name	Score	County	Award
Betty Boswell	427	Guilford	$50 Savings Bond & Plaque
Jerry Willis	426	Cleveland	$25 Savings Bond & Plaque
Peggy Ann Carroll	408	Buncombe	$25 Savings Bond
William Summey	386	Gaston	$25 Savings Bond
Darwin Allen	322	Davie	$25 Savings Bond
Charles E. Graham, Jr.	321	Davidson	Fountain Pen Set
Joe C. Cansler	316	Iredell	Fountain Pen Set
Betty Jane Van Mater	316	Wake	Fountain Pen Set
Judith Needham	262	Alamance	Fountain Pen Set
Tucker Barbour	256	Johnston	Fountain Pen Set

Other counties submitting records on county winners were: Anson, Chatham, Polk, Sampson and Alexander.

Experience has shown that this project has produced results other than the benefits the member receives. Agents have reported that in some instances a member's parents have inquired as to where they could get forms for keeping production records on their herd after the member begins the project.

Again Davidson county led the state in number of members keeping this record. Approximately 30 members in this county kept records on about 75 animals.

The 4-H Dairy Demonstration Program

The 4-H Dairy Demonstration Program was continued in 1955 under the same plan as in previous years. Members participating choose any subject relating to dairying and demonstrate and explain the "shys" and "hows" of the subject chosen.

County winners (either a team of two boys or an individual) were se-

lected in 30 counties to compete in the six District Contests.

A summary of the District Contests follows:

Districts	No. Counties Competing	Winners	Sponsor
Western	3	Ronald Pinkerton(Buncombe) Coluin Pinkerton	Wachovia Bank and Trust Co.
Southwestern	7	Brooks E. Piercy, Jr. (Cleveland)	Catawba Dairies
Northwestern	6	Arnold Reynolds (Chatham)	Wachovia Bank and Trust Co.
Southeastern	5	Bobby Mathews Jimmy Cherry(New Hanover)	White Ice Cream and Milk Co.
Northeastern	6	Thomas Pope (Wake)	Wachovia Bank and Trust Co.
Eastern	3	L. G. Aman, Jr. Billy Vinson (Onslow)	Maola Milk and Ice Cream Co.

(Note: Names of counties competing are shown on Page 50A of this report.)

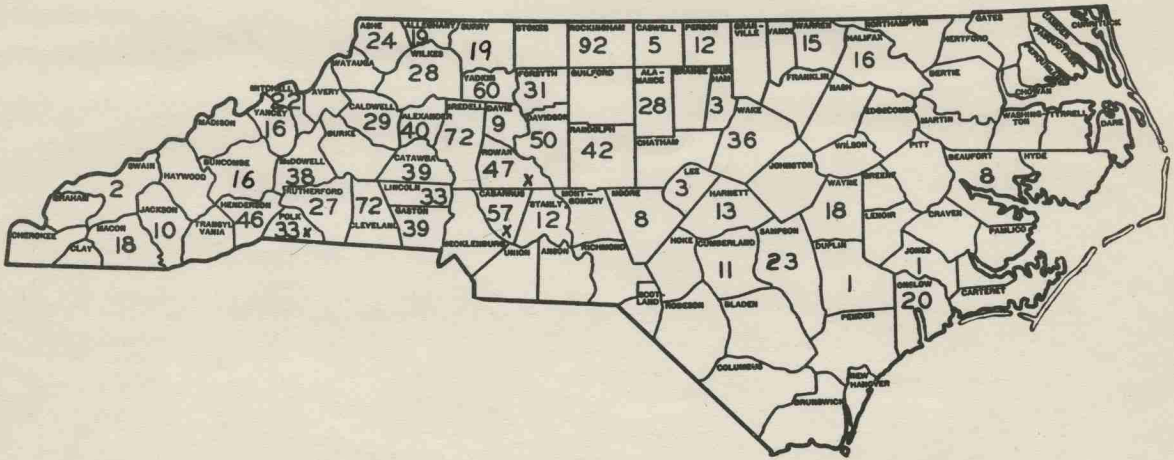
Winners in the District contests received expense-paid trips to 4-H Club week during which they competed in the State Finals. A summary of the State Contest is shown below:

Placing	County	Contestants	Subjects
1st	Cleveland	Brooks E. Piercy, Jr.	"Selecting A Dairy Cow"
2nd	New Hanover	Jimmy Cherry Bobby Mathews	"Fitting A Dairy Animal"
3rd	Chatham	Arnold Reynolds	"Clipping for Cleaner Milk"

First place winner in the State Contest received a gold watch which was given by the North Carolina Milk Producers Federation.

A wide variety of subjects were used by the 4-H members in this program.

PARTICIPATION IN COUNTY JUNIOR DAIRY SHOWS
1955



x TWO SHOWS HELD

50 SHOWS REPORTED

1,263 ANIMALS SHOWN

Eastern District 4-H Dairy Demonstration Contest
Washington, N. C.
July 6, 1955

Placing	Contestants	County	Subject
1st (88)	L. G. Aman, Jr. Billy Vinson Route 2, Jacksonville	Onslow	"Fitting A Dairy Animal For The Show Ring"
2nd (86)	Clarence Chappell, Jr. Belvidere	Perquimans	"Clipping For Cleaner Milk"
3rd (79)	Larry Hargett Albert Cannon Pallocksville	Jones	"Raising A Dairy Heifer"

Sponsor: Maola Milk and Ice Cream Company

Judges: George Hyatt, Jr., In Charge, Dairy Extension
C. D. Grinnells, Dairy Department, N. C. State College

#50- Cleveland State
NC Ass Core Education

Northeastern District 4-H Dairy Demonstration Contest
Raleigh, North Carolina
July 8, 1955

Placing	Contestants	County	Subject
1st	Thomas Pope Route 3, Raleigh	Wake	"Choosing A Good Dairy Heifer"
2nd	Robert Joyner Ray Merritt Route 5, Goldsboro	Wayne	"Care and Feeding of A Dairy Calf"
3rd	Lewis Kennedy Patrick Henry Harper Route 4, Kinston	Lenoir	"Fitting and Showing A Dairy Animal"
4th	Tucker Barbour Route 3, Four Oaks	Johnston	"Selecting A Dairy Cow"
5th	Kenneth Raper Route 1, Rocky Mount	Nash	"Selecting A Dairy Cow"
6th	Henry Tucker Townsville	Vance	"Selecting A Good Dairy Cow"

Sponsor: Wachovia Bank and Trust Company

Judges: Harry Prevette, Pine State Creamery
Ralph Howard, Long Meadow Dairy
Edmund Aycock, Wachovia Bank and Trust Company

Southeastern 4-H Dairy Management Demonstrations
Whiteville, N. C.
July 7, 1955

Placing	Contestants	County	Subject
1st (91)	Bobby Matthews Jimmy Cherry	New Hanover √√	"Fitting A Dairy Animal"
2nd (88)	Charles Lee Andrews Cecil Spell	Sampson √√	"Making and Feeding Silage From A Horizontal Silo"
3rd (79)	Jimmy Adams	Robeson √√	"Dehorning Dairy Cattle"
4th (78)	James T. Albright	Brunswick √√	"Selecting A Good Dairy Cow"
5th (76)	Hunter Smith	Cumberland √√	"Selecting A Good Dairy Cow"

Sponsor: White Ice Cream and Milk Company

Judges: George Hyatt, Jr., In Charge, Dairy Extension
C. D. Grinnells, Dairy Department, N. C. State College

Western District 4-H Dairy Demonstration Contest
David Mallard High School, Asheville
June 28, 1955

Placing	Contestants	Subject
1st	Ronald Pinkerton Colvin Pinkerton (Buncombe County)	"Raising A Dairy Calf"
2nd	York Osborne (Transylvania County)	"Selecting A Good Dairy Cow"
3rd	Brent Barnes (Jackson County)	"Selecting A Good Dairy Cow"

Sponsor: Wachovia Bank and Trust Company

Judges: R. G. Baldwin, Southern Dairies
Burwell Smith, Carolina Power and Light Company
J. D. George, Dairy Extension Specialist

Northwestern District 4-H Dairy Demonstration Contest
North Davidson High School, Lexington
June 30, 1955

1st (88)	Arnold Reynolds Route 2, Pittsboro, N. C. (Chatham County)	"Clipping For Cleaner Milk Production"
2nd(85) (Tie)	Bobby Moore (Guilford County)	"Teaching A Calf To Drink"
2nd (85) (Tie)	Wayne Gunn Charlie Turner, Jr. ~~(Guilford County)~~ Rockingham	"Raising A Dairy Calf"

Others Entering--No Placing

Jimmy Pickard (Alamance)	"Dehorning Dairy Cattle"
H. W. Davis Charles Graham (Davidson)	"Raising A Dairy Calf"
Sam Reich Bobby Rierson (Forsyth)	"Producing Clean Milk"

Sponsor: Wachovia Bank and Trust Company

Judges: Joe Howard--Duke Power Company
Frank McDowell--C. M. P. A.
E. L. McLeod--Coble Dairy Products, Coop.

Southwestern District 4-H Dairy Demonstration Contest
Ball's Creek School, Newton
June 29, 1955

Placing	Contestants	Subject
1st (95)	Brooks E. Piercy, Jr. (Cleveland County)	"Selecting A Dairy Cow"
2nd (94)	Joe Cansler (Iredell County)	"Culling--The Key To Successful Dairying"
3rd (92)	Johnny Etchison Darwin Allen (Davie County)	"Cull The Cow Which Culls The Profit"
4th (91)	Steven Edwards Larry Edwards (Rowan County)	"What Kind of Bulls Are Used In A. B."
5th (86)	Steve Stroud Douglas Stroud (Rutherford County)	"Training and Showing A Dairy Animal"
6th (83)	Paul Yount Allen Hedrick (Catawba County)	"Producing Quality Milk"
7th (82)	Glenn Walker (Burke County)	"Selecting A Good Dairy Cow"

Sponsor: Catawba Dairy

Judges: Frank McDowell--Carolina Milk Producers Association
Joe N. Howard--Duke Power Company

Some of the subjects other than those listed above were:

"Raising a Dairy Calf"
"Making and Feeding Silage From a Horizontal Silo"
"Dehorning Dairy Cattle"
"Culling-The Key To Successful Dairying"
"Cull the Cow That Culls the Profit"
"Kind of Bulls Used in Artificial Breeding"
"Training and Showing a Dairy Animal"
"Producing Quality Milk"
"Teaching A Calf to Drink"

The Dairy Extension Staff assumed the leadership in this program by arranging District Contests, securing sponsors, arranging judges, and provided outlines for demonstrations and other literature for use of local agents in training teams.

4-H Dairy Judging Program

Interest and participation in this phase of 4-H Dairy work was especially outstanding in 1955. A record number of counties participated and the teams were better trained than ever before.

At least a part of this increased interest can be attributed to a series of four judging schools which were held for county workers who trained judging teams. These schools were held at Eskdale Farm, Tryon, C. I. Carlson Farm, Guilford College, Allan Manor Farm, Rocky Mount, and R. S. Edmiston Farm, Mooresville. A total of 32 agents attended these schools.

District 4-H Dairy Judging Contest

At the request of the county agents a District Judging Contest was held in the Western District for the first time. Teams from Macon, Henderson, Haywood, Transylvania, and Buncombe counties competed, with Haywood placing 1st with 1498 points and Buncombe 2nd with 1453 points. These two teams entered the State Contest.

State 4-H Dairy Judging Contests

As in past years both a preliminary and a final State Contest was held. In the preliminary contest which was held at the North Carolina State College Dairy Farm on July 25, teams from 27 counties competed. (See map on page 52A of this report). The placings of the county team in the preliminary contest were as follows:

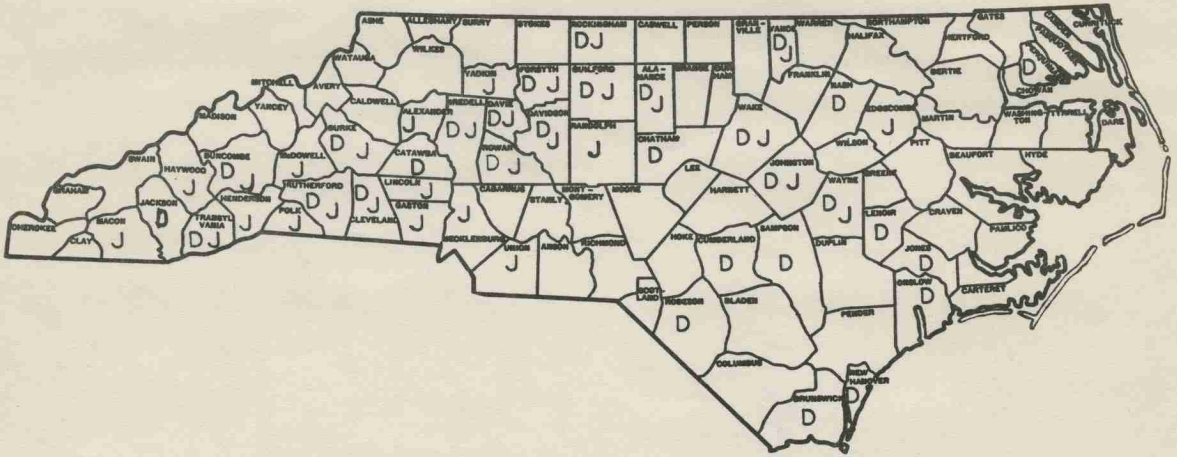
County	Score	County	Score
Cleveland	1573	Randolph	1409
Haywood	1512	Wake	1398
Buncombe	1486	Wayne	1384
Mecklenburg	1485	Johnston	1378
Iredell	1482	Rowan	1365
Yadkin	1480	Alexander	1355
Gaston	1470	Davie	1332
McDowell	1465	Rutherford	1327
Burke	1437	Lincoln	1314
Davidson	1425	Union	1313
Alamance	1422	Edgecombe	1214
Guilford	1421	Polk	1227
Rockingham	1419	Vance	1113
Forsyth	1410		

The first four teams listed above competed in the State Final 4-H Dairy Judging Contest on August 16 and 17 and placed as follows:

Placing	County	Score	Coach
1st	Cleveland	2999	Jack Krause
2nd	Mecklenburg	2968	L. C. Laney
3rd	Buncombe	2869	Hal Reynolds
4th	Haywood	2632	Cecil Brown

The four highest scoring individuals which were chosen as the North Carolina team were:

PARTICIPATION IN 4-H DAIRY JUDGING CONTEST AND 4-H DAIRY DEMONSTRATION PROGRAM IN 1955



J- PARTICIPATED IN 4-H DAIRY JUDGING CONTEST

D- PARTICIPATED IN 4-H DAIRY DEMONSTRATION PROGRAM

File Copy
Do not remove

Copies sent to all participants and their coaches. 8/23/55

State Finals-State 4-H Dairy Judging Contest
August 16 and 17, 1955

	CLEVELAND				HAYWOOD				BUNCOMBE				MECKLENBURG			
CLASSES	Piercy	Watterson	Bridges	Willis	Phillip	Garrett	Kirkpatrick	Davis	Pinkerton	Carroll	Carland	Todd	Greene	Watts	Hynes	Raymer
HOLSTEINS																
4 Yr.Olds Pl	35	30	35	45	50	50	45	50	50	45	50	47	50	35	50	45
WR	37	30	31	39	37	35	38	28	36	38	39	37	41	44	44	33
2 Yr.Olds Pl	46	47	50	50	50	41	50	47	46	46	47	50	50	50	47	50
OR	37	35	43	43	30	38	32	22	38	40	28	43	45	40	41	45
Heifers(Spr.)	37	28	41	28	15	35	13	24	37	13	50	14	31	41	26	31
OR	24	28	46	30	20	30	20	15	44	38	36	32	38	46	38	34
Heifers(Open)	42	47	50	47	42	42	47	42	41	47	50	47	45	42	50	41
Totals	258	245	296	282	244	271	245	228	292	267	300	270	300	298	296	279
Team Total				836				744			859					894
JERSEYS																
(CD)Aged Cows																
Pl	36	36	42	32	32	20	49	46	50	49	49	49	37	46	37	36
OR	40	32	44	46	32	35	42	31	40	38	30	40	40	30	45	34
(My)3 Yr.Olds																
PL	50	38	50	47	50	48	45	48	47	50	47	47	38	50	50	47
WR	41	23	36	37	39	38	27	35	39	44	23	42	34	41	43	39
(CD)Jr. Yr.																
Heifers	49	50	42	43	20	32	36	36	47	50	43	32	49	32	36	42
(My)Sr.Calves	45	47	45	45	45	47	45	45	45	48	43	46	45	47	47	39
(CD)Sr.Calves	50	48	48	46	48	46	44	48	48	50	48	48	44	42	48	48
Totals	311	274	307	296	266	266	288	289	316	329	283	304	287	288	306	285
Team Total				914				843			928					881

	CLEVELAND				HAYWOOD				BUNCOMBE				MECKLENBURG			
CLASSES	Piercy	Watterson	Bridges	Willis	Phillip	Garrett	Kirk-Patrick	Davis	Pinkerton	Carroll	Carland	Todd	Greene	Watts	Hynes	Raymer
AYRSHIRES																
2 Yr. Old Cows P1	39	31	45	50	50	50	45	49	50	38	45	38	39	32	44	50
OR	42	32	45	45	37	42	31	30	44	40	24	40	43	25	30	40
Aged Cows P1	50	28	48	46	40	44	46	34	48	48	28	40	48	50	50	48
WR	35	32	41	40	26	37	36	28	38	42	24	37	46	46	48	38
Totals	166	123	179	181	153	173	158	141	180	168	121	155	176	153	172	176
Team Total				526				472			469					501
GUERNSEYS																
4 Yr. Olds (Kil) P1	49	49	49	49	43	30	50	43	49	49	49	49	45	50	39	49
OR	44	35	46	42	20	18	34	18	40	37	32	25	34	42	44	38
(Kil) 2 Yr. Olds P1	32	40	43	40	29	32	32	43	17	40	22	20	29	26	44	29
WR	28	24	30	32	20	30	30	18	28	40	18	24	40	32	42	22
(Kil) Jr.Yr. Heifers	50	31	39	49	28	39	42	45	46	39	31	48	46	46	45	50
(Kil) Sr. Calves	28	28	36	37	16	25	22	22	12	31	31	46	32	31	25	31
Totals	231	207	243	249	156	174	210	189	192	236	183	188	226	227	239	219
Team Total				723				573			611					692
GRAND TOTALS	966	849*	1025	1008	819*	884	901	847	980	1000	889	941	989	966	1013	959*
TEAM TOTAL				2999				2632			2869					2968

* Designates Alternate

Name	Score	County
Charles Bridges, Jr.	1025	Cleveland
Jim Hynes	1013	Mecklenburg
Jerry Willis	1008	Cleveland
Peggy Ann Carroll	1000	Buncombe

Mr. Jack Krause, coach of the Cleveland team was named coach for having coached the 1st place county team.

National 4-H Dairy Judging Contest

After further intensive training under the leadership of J. D. George and Mr. Krause, the team and coaches left on September 28 for the National 4-H Dairy Judging Contest, Waterloo, Iowa. Several training stops were made en route. At the National contest the North Carolina team placed 5th in the over-all contest, placing 4th in the Brown Swiss, 2nd in Holsteins, and 6th in Guernseys.

The sponsor for the trip to the national contest was the North Carolina Purebred Dairy Cattle Association.

4-H Dairy Judging Contest, Atlantic Rural

A team consisting of J. B. Watts, John Raymer and John Green, Mecklenburg County, and Edward Todd, Yadkin County, and coached by Mr. L. C. Laney, Assistant County Agent, Charlotte, represented North Carolina at the Invitational 4-H Judging Contest, Atlantic Rural Exposition, Richmond, Va. The team placed 6th in this contest and Edward Todd placed 3rd in individual scores.

State 4-H Dairy Judging Contest for Negroes

A state-wide 4-H Dairy Judging contest for Negro 4-H members was held for the first time in 1955. This was held at the State College Dairy Farm on August 19. Teams from 22 counties competed. The team from Halifax County placed 1st with 1188 points and Rockingham was 2nd with 1175 points.

Junior Dairy Show Program

The Dairy Show program for 4-H members continues to be the most comprehensive of any of the 4-H dairy activities in that more members participate in this activity than any other.

The experience the members get from participating is very valuable in creating an appreciation for the dairy animal. There is also a great indirect benefit in this project. Boys and girls often secure a dairy calf just to compete in a show; thus, it serves as a means of stimulation in getting 4-H members to choose dairying as a project.

County and Local Shows

The "Grass Roots" of the entire show program are the county and local shows. Since these shows are local in nature, the interest of parents and local people is greater than in other type shows.

The county shows are planned and conducted by county workers. The Dairy Extension Staff has assisted with these shows by judging and also by lending advise on rules and other operating details.

A list of county shows held in 1955 is shown in the table below. (Also see map on page 50A of this report).

County	No. Animals Shown	County	No. Animals Shown
Alamance	28	Lee	3
Alexander	40	Lincoln	33
Alleghany	19	McDowell	38
Ashe	24	Macon	18
Beaufort	8	Mitchell	22
Buncombe	16	Moore	8
Cabarrus	57*	Onslow	20
Caldwell	29	Person	12
Catawba	39	Polk	33*
Caswell	5	Randolph	42
Cleveland	72	Rowan	47*
Davidson	50	Rockingham	92
Davie	9	Rutherford	27
Duplin	1	Sampson	23
Durham	3	Stanly	12
Forsyth	31	Surry	19

County and Local Shows (Continued)

County	No. Animals Shown	County	No. Animals Shown
Cumberland	11	Swain	2
Gaston	39	Wake	36
Halifax	16	Warren	15
Harnett	13	Wayne	18
Henderson	46	Wilkes	28
Iredell	72	Yadkin	60
Jackson	10	Yancey	16
Jones	1		
Total Shows	50	Total Animals	1263

*Two shows held

County Shows for Negroes

In addition to shows listed above, a group of local shows in which negroes competed were held. These shows were conducted by local Negro agents under the leadership of Mr. R. L. Wynn, Negro Extension Dairy Specialist. A complete report on these shows is not available at this time.

District Junior Dairy Shows

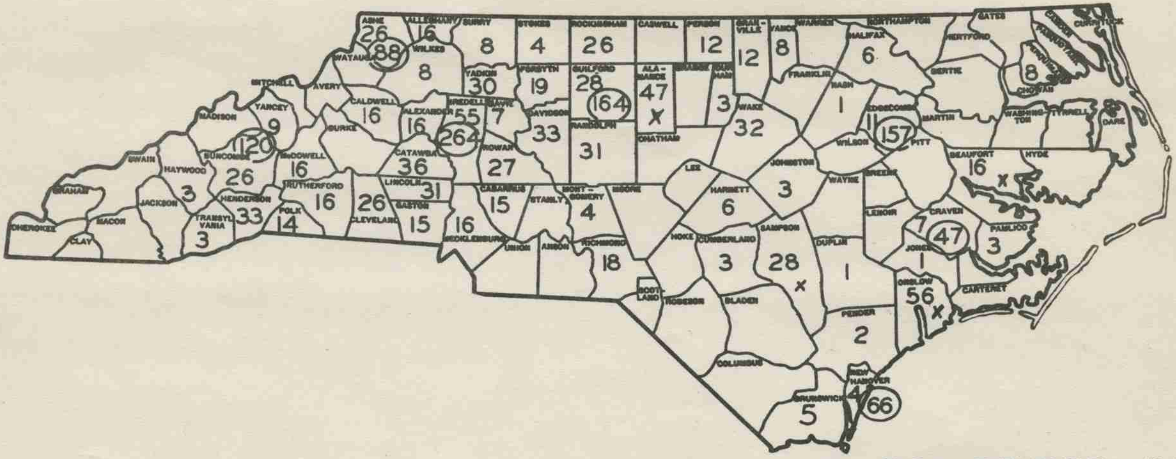
Seven District Junior Dairy Shows were conducted in 1955. This is one less than in 1954. The show at Murphy, serving the western area of the state, was not held due to last minute problems which arose. The Dairy Extension Staff assumed the leadership in planning and conducting these shows.

A summary of these shows is shown in the two tables which follow. Also, a map (page 55A) shows participation by counties.

Summary of District Shows - 1955 - By Breeds

Breed	Blue	Red	White	Total
Ayrshires	29	18	1	48
Brown Swiss	1	--	-	1
Guernseys	107	128	25	260
Holsteins	97	64	8	169
Jerseys	178	141	25	344
Grades	22	54	8	84

PARTICIPATION IN DISTRICT DAIRY SHOWS – 1955



7 SHOWS

906 ANIMALS

BREAKDOWN BY RIBBONS:

434	BLUES	(47.9 %)
405	REDS	(44.7%)
67	WHITES	(7.4%)

Summary of District Junior Dairy Shows - 1955

District Show	No. Animals Shown	Ayrshire	Brown Swiss	Guernsey	Holstein	Jersey	Grade
Asheville	120	6	0	47	23	44	0
Greensboro	164	14	0	59	59	32	0
New Bern	47	1	0	0	5	32	9
Rocky Mount	157	3	0	56	20	45	33
Statesville	264	23	1	59	39	142	0
West Jefferson	88	0	0	30	10	15	33
Wilmington	66	1	0	9	13	34	9
Total	906	48	1	260	169	344	84

Breed	Blues	Reds	Whites	Total
Ayrshire	29	18	1	48
Brown Swiss	1	0	0	1
Guernsey	107	128	25	260
Holstein	97	64	8	169
Jersey	178	141	25	344
Grade	22	54	8	84
Total	434	405	67	906

FINANCES

Paid Premiums	$ 7587.50
Miscellaneous	1868.03
Total for Shows	9455.53

JUNIOR DAIRY SHOW
N. C. STATE FAIR, 1955

COUNTY	NO. CATTLE SHOWN	AYRSHIRE	GUERNSEY	HOLSTEIN	JERSEY
Alamance	7	1	3	0	3
Buncombe	14	1	0	6	7
Catawba	19	0	0	0	19
Davidson	24	0	7	17	0
Edgecombe	3	0	3	0	0
Guilford	12	0	6	6	0
Harnett	6	0	0	6	0
Henderson	19	0	7	6	6
Iredell	33	8	7	8	10
McDowell	13	0	7	0	6
Mecklenburg	2	0	0	2	0
Nash	2	0	0	2	0
Onslow	12	1	0	0	11
Randolph	17	0	3	8	6
Richmond	13	0	2	1	10
Rockingham	7	7	0	0	0
Rowan	6	6	0	0	0
Rutherford	3	3	0	0	0
Sampson	2	0	0	2	0
Wake	15	0	2	5	8
Wilson	3	0	1	2	0
Yancey	2	0	0	0	2
Total	234	27	48	71	88

BREED	BLUES	REDS	WHITES	TOTAL
Ayrshire	17	10	0	27
Guernsey	28	19	1	48
Holstein	30	38	3	71
Jersey	43	42	3	88
Total	118	109	7	234

FINANCES

Blue - 118 x $18	=	$ 2124
Red - 109 x 15	=	1635
White - 7 x 5	=	35
Total on Ind.		$ 3794
County Herds		300
Herdsman		33
Total		$ 4127

JUDGE

Dr. D. W. Colvard, N. C. State College

GRAND CHAMPIONS

Ayrshires:
Jimmy Edmiston (Iredell) Strathglass Valiant Snowball
Guernseys:
Myra Lou Hollamon (Henderson) Skybrook Noble Rena
Holsteins:
Betty Jane Van Mater (Wake) Emmet Gold Nuggett
Jerseys:
Carolyn Lutz (Catawba) Bodicia Eva Design Beauty

COUNTY HERDS

Ayrshires:
1st - Iredell
Guernseys:
1st - Henderson
Holsteins:
1st - Henderson
Jerseys:
1st - Catawba

ASHEVILLE DISTRICT JUNIOR DAIRY SHOW
September 27, 1955
Asheville, North Carolina

County	No. Animals Shown	Ayrshire	Guernsey	Holstein	Jersey
Buncombe	26	1	9	7	9
Haywood	3	0	1	1	1
Henderson	33	0	18	8	7
McDowell	16	0	12	0	4
Polk	14	0	2	0	12
Rutherford	16	5	1	4	6
Transylvania	3	0	0	0	3
Yancey	9	0	4	3	2
Total	120	6	47	23	44

Breed	Blues	Reds	Whites	Total
Ayrshire	5	1	0	6
Guernsey	26	21	0	47
Holstein	12	10	1	23
Jersey	32	10	2	44
Total	75	42	3	120

FINANCES

Blues - $ 8.00
Reds - $ 6.50
Whites - $ 5.50

Paid Premiums $ 889.50
Miscellaneous 139.03
Total for Show $ 1028.53

JUDGES

George Hyatt, Jr., In Charge, Dairy Extension, N. C. State College, Raleigh, N. C.

Grover Dobbins, County Agent, Taylorsville, N. C.

GREENSBORO DISTRICT JUNIOR DAIRY SHOW
September 9, 1955
Greensboro, North Carolina

County	No. Animals Shown	Ayrshire	Guernsey	Holstein	Jersey
Alamance	23	3	5	1	14
Davidson	33	0	14	14	5
Forsyth	19	0	8	10	1
Guilford	28	1	9	16	2
Randolph	31	0	11	13	7
Rockingham	26	10	10	5	1
Stokes	4	0	2	0	2
Total	164	14	59	59	32

Breed	Blues	Reds	Whites	Total
Ayrshire	5	9	0	14
Guernsey	16	34	9	59
Holstein	25	31	3	59
Jersey	12	14	6	32
Total	58	88	18	164

FINANCES

Blue - $7.00

Red - $5.00

White - $4.00

Paid Premiums - $968.00

Miscellaneous - $300.00

Total for Show - $1268.00

JUDGES:

Dr. W. R. Murley, N. C. State College

L. C. Laney, Assistant County Agent, Mecklenburg County

NEW BERN DISTRICT JUNIOR DAIRY SHOW
September 15, 1955
New Bern, North Carolina

County	No. Animals Shown	Ayrshire	Holstein	Jersey	Grade
Beaufort	8	0	2	3	3
Craven	7	0	2	2	3
Jones	1	0	0	1	0
Onslow	28	1	1	24	2
Pamlico	3	0	0	2	1
Total	47	1	5	32	9

Breed	Blues	Reds	Whites	Total
Ayrshire	1	0	0	1
Holstein	3	2	0	5
Jersey	10	21	1	32
Grade				
2 Yr. Olds	0	1	0	1
Jr. & Sr. Yearlings	2	2	0	4
Senior Calves	0	3	0	3
Jr. Calves	0	1	0	1
Total	16	30	1	47

FINANCES

Blues - $9.00
Reds - $8.00
Whites - $7.00

Paid Premiums	$ 391.00
Miscellaneous	212.00
Total for Show	$ 603.00

JUDGES

Dr. W. R. Murley, N. C. State College
George Coble, Assistant County Agent, Graham

ROCKY MOUNT DISTRICT JUNIOR DAIRY SHOW
September 9, 1955
Rocky Mount, North Carolina

County	No. Animals Shown	Jerseys	Guernseys	Holsteins	Ayrshires	Grades
Alamance	24	12	5	1	3	3
Beaufort	8	3	0	2	0	3
Durham	3	0	3	0	0	0
Edgecombe	11	0	5	0	0	6
Granville	12	0	2	7	0	3
Halifax	6	0	6	0	0	0
Johnston	3	2	0	0	0	1
Nash	1	0	0	1	0	0
Perquimans	8	0	8	0	0	0
Person	12	0	4	0	0	8
Richmond	18	12	2	1	0	3
Sampson	11	1	6	3	0	1
Vance	8	0	5	0	0	3
Wake	32	15	10	5	0	2
Total	157	45	56	20	3	33

Breed	Blues	Reds	Whites	Total
Holstein	16	4	0	20
Jersey	22	20	3	45
Guernsey	23	29	4	56
Ayrshire	2	1	0	3
Grade				
3 Yr. Olds	0	1	0	1
2 Yr. Olds	1	0	0	1
Jr. & Sr. Yearlings	4	4	1	9
Sr. Calves	0	17	1	18
Jr. Calves	2	2	0	4
Total	70	78	9	157

FINANCES
Blue - $11.00
Red - $ 9.00
White - $ 8.00

JUDGES
Dr. W. R. Murley, N. C. State College
Robert Williams, N. C. State College Dairy Farm

Paid Premiums - $1580.00
Miscellaneous - 600.00
Total for Show - $2180.00

STATESVILLE DISTRICT JUNIOR DAIRY SHOW
September 2, 1955
Statesville, North Carolina

County	No. Animals Shown	Ayrshire	Brown Swiss	Guernsey	Holstein	Jersey
Alexander	16	0	0	4		12
Cabarrus	15	0	0	10	2	3
Caldwell	16	0	0	7	1	8
Catawba	36	0	0	1	2	33
Cleveland	26	0	0	2	1	23
Davie	7	0	0	6	1	0
Gaston	15	0	0	0	5	10
Iredell	55	11	1	11	6	26
Lincoln	31	0	0	8	9	14
Mecklenburg	16	0	0	2	7	7
Montgomery	4	0	0	0	4	0
Rowan	27	12	0	8	1	6
Total	264	23	1	59	39	142

Breed	Blues	Reds	Whites	Total
Ayrshire	15	7	1	23
Brown Swiss	1	0	0	1
Guernsey	22	28	9	59
Holstein	27	8	4	39
Jersey	78	53	11	142
Total	143	96	25	264

Finances

Blue	$ 8.50
Red	$ 7.50
White	$ 6.50

Paid Premiums - $2500.00

Miscellaneous - 300.00

Total for Show- $2800.00

JUDGES

Dr. W. R. Murley, N. C. State College

J. E. Stacy, Assistant County Agent, Union County

WEST JEFFERSON DISTRICT JUNIOR DAIRY SHOW
September 9, 1955
West Jefferson, North Carolina

County	No. Animals Shown	Jersey	Guernsey	Holstein	Grades
Alleghany	16	0	4	0	12
Ashe	26	1	10	2	13
Surry	8	3	1	0	4
Wilkes	8	3	3	2	0
Yadkin	30	8	12	6	4
Total	88	15	30	10	33

Breed	Blues	Reds	Whites	Total
Guernsey	17	11	2	30
Holstein	8	2	0	10
Jersey	11	4	0	15
Grade				
3 Yrs. Old	1	1	1	3
2 Yrs. Old	1	0	0	1
Jr. & Sr. Yearlings	3	7	2	12
Sr. Calves	3	7	1	11
Jr. Calves	1	3	2	6
Total	45	35	8	88

FINANCES

Blue - $8.00
Red - $7.00
White - $6.00

Paid Premiums - $683.00
Miscellaneous - 117.00
Total for Show - $800.00

Judges:

Dr. J. W. Pou, N. C. State College

S. B. Brandon, County Agent, Danbury

WILMINGTON DISTRICT JUNIOR DAIRY SHOW
September 16, 1955
Wilmington, North Carolina

County	No. Animals Shown	Ayrshire	Guernsey	Holstein	Jersey	Grade
Brunswick	5	0	0	0	5	0
Cumberland	3	0	0	2	1	0
Duplin	1	0	0	0	1	0
Harnett	6	0	0	6	0	0
New Hanover	4	0	0	0	1	3
Onslow	~~28~~ 27	1	0	0	24	~~3~~ 2
Pender	2	0	0	2	0	0
Sampson	17	0	9	3	2	3
Total	~~66~~ 65	1	9	13	34	~~9~~ 8

Breed	Blues	Reds	Whites	Total
Ayrshire	1	0	0	1
Guernsey	3	5	1	9
Holstein	6	7	0	13
Jersey	13	19	2	34
Grade				
Jr. Calves	0	1	0	1
Sr. Calves	~~2~~ 1	0	0	~~2~~ 1
Jr. & Sr. Yearlings	2	2	0	4
2 Yr. Olds	0	2	0	2
Total	~~27~~ 26	36	3	~~66~~ 65

FINANCES

Blues - $10.00
Reds - $ 8.00
Whites - $ 6.00

Paid Premiums	$576.00
Miscellaneous	200.00
Total for Show	$776.00

JUDGES

Dr. W. R. Murley, N. C. State College
George Coble, Assistant County Agent, Graham, N. C.

Summary of District Junior Dairy Shows - 1955

District Show	No. Ribbons Awarded Blue	Red	White	Total	No. Counties	Approx. Money Spent
Asheville	75	42	3	120	8	$1,028
W. Jefferson	45	35	8	88	5	800
Greensboro	58	88	18	164	7	1,268
New Bern	16	30	1	47	5	603
Rocky Mount	70	78	9	157	14	2,180
Statesville	143	96	25	264	12	2,800
Wilmington	27	36	3	66	8	776
Totals	434	405	67	906	59	$9,455

All premiums and other expenses connected with the operation of these shows were provided by business and civic organizations within the state. Sponsors were: Statesville, Belk stores in area; Greensboro, Greensboro Chamber of Commerce and Kiwanis Club; West Jefferson, Belk Stores and Northwestern Bank; Rocky Mount, Belk and Leggett Stores; New Bern, New Bern Chamber of Commerce; Wilmington, Wilmington Chamber of Commerce; and Asheville, Dairy Plants and producers in area.

Fitting and showmanship prizes were given by each of the purebred dairy breed associations in the state (Holstein, Jersey, Guernsey, and Ayrshire).

District Shows For Negroes

District Junior Dairy Shows for Negroes were conducted in the same manner as for whites. Mr. R. L. Wynn, Negro Extension Dairy Specialist, assumed the leadership in planning and conducting these shows. A brief summary is shown below:

Place of Show	Total Animals	Ribbons Blue	Red	White	Money Spent
Raleigh	25	9	12	4	$ 323
Kinston	23	7	18	8	330
Lumberton	27	7	10	10	260
Clarkton	42	9	19	14	350
Fayetteville	44	21	10	13	590

District Shows for Negroes (Continued)

Place of Show	Total Animals	Ribbons Blue	Red	White	Money Spent
Statesville	65	30	31	4	$522
Ahoskie	50	4	13	33	834
Greenville	52	12	24	16	659
Greensboro	56	29	21	6	487
Troy	30	8	13	9	177
Shelby	72	33	25	14	448
Totals	496	169	196	131	$4,680

Junior Dairy Show at State Fair

Personnel of the Dairy Extension Staff again supervised the State Junior Dairy Show at the North Carolina State Fair. There were 234 animals exhibited from 22 counties. This represents the largest State Junior Dairy Show in history. A brief summary of this show follows:

Breed	Ribbons Awarded Blue	Red	White	Total
Ayrshires	17	10	0	27
Guernseys	28	19	1	48
Holsteins	30	38	3	71
Jerseys	43	42	3	88
Totals	118	109	7	234

Premiums totaling $4,127 were awarded by the North Carolina State Fair.

Summary of all Junior Shows

	No. Shows	No. Animals
County and Local (Whites)	50	1263
District Shows (Whites)	7	906
District Shows (Negroes)	11	496
State Junior Show	1	234
Totals	69	2899

Approximate amount spent in shows (Cash and Merchandise) $30,530

4-H Dairy Calf Placement

The Dairy Extension Staff has worked closely with county agents in locating and placing dairy calves with 4-H members. Dairy calf chains and foundations have functioned in about the same number of counties as in the past. Approximately 200 purebred dairy calves were placed through foundations in 1955.

By keeping in touch with the officers of the various Breed Organizations, an adequate supply of calves was available at all times.

Cooperation With Breed Organizations on Junior Programs

This office has worked very closely with each of the Dairy Breed Organizations in the state on their Junior programs. In turn the Breed Organizations have supported 4-H dairy work in many ways.

All of these organizations, North Carolina Jersey Breeders Association, North Carolina Holstein Breeders Association, North Carolina Guernsey Breeders Association, and North Carolina Ayrshire Breeders Association, provided fitting and showmanship awards for exhibitors of their respective breeds in all District shows and at the State Junior Dairy Show. Through the North Carolina Purebred Dairy Cattle Association they all contributed toward the expenses of sending the State 4-H Dairy Judging Team to the National Contest.

The Jersey, Guernsey and Holstein associations awarded certificates of merit to outstanding 4-H members owning the respective breeds and invited the recipients to the annual meetings.

Teaching Aids for Agents' Use

As in the past, considerable emphasis has been placed on providing agents with teaching aids on dairy subjects. Also, agents have been in-

structed and trained in the proper use of these materials.

Slides and posters were made available on the following subjects:

1. "The 4-H Dairy Project"
2. "Clean Milk Production"
3. "Bacteria, Milk and Business"
4. "Dehorning Dairy Cattle"
5. "Fitting and Showing Dairy Cattle"
6. "Judging Dairy Cattle"
7. "Raising Dairy Calves"
8. "Care of the Dairy Cow" (prepared during 1955)

In addition to the above visual aids, other teaching aids on most all subjects were supplied to county agents. Approximately 2,500 copies of the 4-H Dairy Manual were distributed by the local agents.

PROJECT IV

COOPERATION WITH OTHER ORGANIZATIONS AND AGENCIES

Breed Associations

At the annual meeting of each of the dairy breed associations, Jersey, Guernsey, Holstein and Ayrshire, a plan of work for the year is developed. The specialists assist in developing these plans to better coordinate and improve the effectiveness of these groups. These associations assist in developing the dairy industry in the state through the promotion and sale of registered dairy cattle. Their efforts are particularly effective through 4-H dairy club work. Their activities in the 4-H and production testing fields are described in other sections of this report. In addition these breed associations are composed of leaders in the dairy field who assist in many ways to promote better dairy practices throughout the state.

During 1955 the dairy specialists assisted with numerous county, state and district field days and shows sponsored by the four major dairy cattle breed organizations. Approximate attendance for these events; 3000. In each instance the specialist assisted with the development and participated in these programs which emphasized various phases of breeding, feeding, management, herd health and milk marketing.

Judging Schools

This year for the first time four one-day judging schools were held for county agents. Three of these were Guernsey judging schools and one was for Ayrshires. Thirty-three agents were trained in different parts of the state as well as 120 dairymen, vocational agriculture teachers and dairy plant fieldmen. There was a definite need for this activity to

assist agents in the training of 4-H dairy judging teams and to bring dairymen and other dairy leaders up to date on what constitutes the right type in dairy cattle conformation. It also supplies needed training for county agents and breeders called upon to judge dairy shows and fairs. These were so successful that many more are being planned for 1956 with different breeds and in nearly every section of the state.

North Carolina Purebred Dairy Cattle Association

The North Carolina Purebred Dairy Cattle Association assists with problems related to the development of the dairy industry in North Carolina. Two state wide meetings of this group were held during the year for planning purposes and two call meetings of the executive committee were held. This group assisted with the sponsoring of the judging schools and the development of plans for a milking parlor and milk bar at the State Fair Grounds. Plans have been approved by the state fair director for these new facilities to be erected during 1956. This organization helped tremendously in bringing together the various dairy interests in the state so these plans could be brought into being.

The North Carolina Purebred Dairy Cattle Association has assisted in promoting 4-H and production testing programs at County, State, and Regional Fairs in North Carolina.

North Carolina State Grange and Farm Bureau Federation

The North Carolina State Grange and Farm Bureau each have dairy committees for developing policy and legislation in the field of dairying. The specialist has advised with each of these committees during the year whenever called on.

North Carolina Milk Commission

(Report found under Project V)

American Dairy Association

The North Carolina branch of the American Dairy Association was organized in 1953. Producers in North Carolina are now on a year around set aside of two cents per hundred pounds of milk. Two full time men are now working with this organization in North Carolina. The specialist has cooperated closely with this organization in its establishment and development. The specialist has spoken at numerous county and state meetings and participated in 10 television and many radio broadcasts emphasizing the importance of milk and dairy products in the diet.

Assistance was given the American Dairy Association in decorating the barns at the state fair and the construction and operation of an American Dairy Association booth.

Banks

The dairy specialist has cooperated with the bankers of the state in order to better acquaint them with the needs of dairymen. This cooperation has resulted in making credit more available to dairymen when needed.

A two-week short course for young farmers, sponsored by the banks, is held each year. These young men come from nearly every county in North Carolina. They are given training and a look at the agricultural program at State College.

American Breeders Service

Cooperation with this organization in the Artificial Breeding Program is outlined in Project I of this report.

Milk Plant Fieldmen and Sanitarian's Conference

The second state-wide conference of milk plant fieldmen and Sanitarians was held in November 1955. One-hundred-fifty attended. This was the second one of these conferences which brings together two groups that work closely with dairymen on an educational and regulatory basis. It is already evident that last year's conference brought about many beneficial results in better understanding and cooperation.

The dairy specialist was chairman of the program committee and spent considerable time on this project. Much of the discussion centered around quality, sanitation and milk production problems.

Shows and Fairs Judged

The dairy specialists have worked very closely with county agents and fair officials in order to make the dairy exhibits and the showing of dairy cattle at these events more educational. Progress has been made along these lines. The dairy specialists judged 65 shows, the majority of which were mainly 4-H. Reasons on the placings were given at each show as was instruction on fitting and showing. Whenever feasible remarks were made about the use and value of dairy products in the diet. In addition to these shows the dairy specialist served as official judge for all breeds at the West Virginia State Fair at Lewisburg, West Virginia and the Cuban Provincial Show at Sancti Spiritus, Cuba. He also helped select the classes and listen to reasons for the 4-H and Intercollegiate dairy cattle judging contests held in conjunction with the International Dairy Show at Chicago.

American Dairy Science Association

The dairy specialists are all active members of the American Dairy

Science Association. Six of the specialists attended the National meetings at Michigan State University. One is a Director of the Association, and a member of the membership and antibiotic committees. One is chairman of the Association's 4-H Committee. Exhibits were prepared for exhibition at the National meetings and one of the specialists moderated a panel on 4-H before the extension section.

Other Activities

The dairy specialist participated in the regional Jersey and Holstein planning conferences at Roanoke, Virginia in November. This conference coordinates the activities of the breed associations and extension in some of the Southeastern States. The dairy specialist is a member of the National Purebred Dairy Cattle Association subcommittee on type and a member of the Dairy Husbandry Research Branch Advisory Group on the DHIA and Sire Proving work of the U.S.D.A. The latter committee met in Washington in 1955.

PROJECT V - DAIRY MARKETING

This project was added to the 1955 plan of work of the dairy specialist. However the major portion of the dairy marketing project is carried out by the dairy marketing specialist associated with the Agricultural Economics Department.

North Carolina Milk Commission

In March of 1954 the North Carolina legislature set up a milk commission to help develop a more orderly system of purchasing and selling Grade A milk in the state. The college was instructed at that time to furnish technical information on milk marketing problems to the commission. The dairy specialist is a member of the college milk marketing committee charged with this responsibility. This activity has required a great deal of time during the past two years. Numerous papers on milk pooling, classification, auditing and other phases of dairy marketing have been prepared by this committee.

Dairy Schools

Fifty-five county-wide dairy schools were reported on under Project II. The milk marketing specialist participated in these schools and discussed the milk classification and auditing system with dairymen. Dairymen as a group do not understand the way they are paid for milk, neither do they understand auditing or many other phases of milk marketing.

Exhibit I

DAIRY FIELDMEN
and
SANITARIANS
CONFERENCE

College Union Building
N. C. State College
Raleigh, N. C.

November 22-23, 1955

Conducted by

Department of Animal Industry
School of Agriculture
N. C. State College

In Cooperation with the

Dairy Plant Fieldmen
County Sanitarians
and
Division of College Extension

PROGRAM

TUESDAY, NOVEMBER 22, 1955

8:00 a.m. Registration—College Union Building

Morning Program

College Union W. M. Roberts, Chairman

9:00 a.m. Welcome—D. W. Colvard

9:15 a.m. What's New in Dairy Research—J. W. Pou

9:45 a.m. Trends in Feeding Dairy Cattle—
W. R. Murley

10:30 a.m. Forum Discussion—"Handling The Problem Producer"
Howard Hunt
Robert Pryor
L. A. Zahradka

12:00 Noon Luncheon, College Union Building
George Hyatt, Chairman
Football Movies—Coach Earle Edwards

Afternoon Program

College Union M. B. Caldwell, Jr. Chairman

1:30 p.m. Movie

1:40 p.m. A Consumer Looks at the Dairy Industry—
Mrs. William C. Pressly

2:00 p.m. A New Approach to Farm Sanitation—W. M. Roberts

2:45 p.m. The Relation of Quality to Sales—H. F. Judkins

3:45 p.m. The Birth and Value of Milk Regulations—
John Faulkner

4:30 p.m. Adjourn

WEDNESDAY, NOVEMBER 23, 1955

Morning Program

College Union Harry Prevette, Chairman

8:30 a.m. The ABR Ring Test and Its Use in North Carolina—H. J. Rollins

9:00 a.m. The Fieldman, the Sanitarian, and the County Agent—A Team,—L. A. Zahradka

9:45 a.m. Can We Control Off Flavors From Pasture?
—George Hyatt, Jr.

10:15 a.m. Testing the Cows and the Dairyman—Ralph Howard—M. E. Senger

11:00 a.m. Our Experience with Bulk Handling—R. P. Kapp

11:40 a.m. Questions and Discussion

12:00 Noon Adjourn

OFF-CAMPUS

John Andrews, Chief, Sanitation Section, Sanitary Engineering Division, State Board of Health, Raleigh, N. C.

M. B. Caldwell, Jr., District Milk Sanitarian, Western District. Office, State Board of Health, Asheville, N. C.

John D. Faulkner, Chief, Milk, Food and Shellfish Branch, Division of Sanitary Engineering Services, U. S. Public Health Service, Washington, D. C.

Ralph Howard, Fieldman, Long Meadow Farms, Durham, N. C.

Howard Hunt, Fieldman, Pet Milk Company, Greenville, Tenn.

H. F. Judkins, Director, National Dairy Products Company, New York, N. Y.

R. P. Kapp, Manager, Edisto Farms, Columbia, S. C.

Mrs. William C. Pressly, Homemaker and Radio Commentator, WPTF Radio Station, Raleigh, N. C.

Harry Prevette, Fieldman, Pine State Creamery, Raleigh, N. C.

Robert Pryor, Sanitarian, Gaston County Health Department, Gastonia, N. C.

H. J. Rollins, State Veterinarian, Raleigh, N. C.

Henry Vanstory, Fieldman, Carnation Milk Company, Statesville, N. C.

L. A. Zahradka, L. A. Zahradka and Associates, Oconomowoc, Wisconsin

ON CAMPUS

L. W. Aurand, Dept. of Animal Industry, N. C. S.
T. C. Blalock, Dairy Extension Specialist, N. C. S.
L. F. Blanton, Dept of Animal Industry, N. C. S.
J. C. Brown, Extension Editor, N. C. S.
D. W. Colvard, Dean, School of Agriculture, N. C. S.
Earle Edwards, Head Football Coach, N. C. S.
F. R. Farnham, Dairy Extension Specialist, N. C. S.
J. D. George, Dairy Extension Specialist, N. C. S.
George Hyatt, Jr., In Charge, Dairy Extension, N. C. S.
W. R. Murley, Dept. of Animal Industry, N. C. S.
Grover Page, Dept. of Animal Industry, N. C. S.
J. W. Pou, Head, Dept. of Animal Industry, N. C. S.
R. B. Redfern, Dept. of Animal Industry, N. C. S.
R. R. Rich, Dairy Extension Specialist, N. C. S.
W. M. Roberts, Dept. of Animal Industry, N. C. S.
M. E. Senger, Dairy Extension Specialist, N. C. S.
M. L. Speck, Dept. of Animal Industry, N. C. S.
M. E. Starnes, College Extension Division, N. C. S.
W. E. Thomas, Dept. of Animal Industry, N. C. S.
F. E. Warren, Dept. of Animal Industry, N. C. S.

APPLICATION

ADVANCED REGISTRATION

Name _____

Employer _____

Address _____

Town _____

State _____ County _____

Names of other persons who will attend:

_____

_____

_____

( ) Enclosed you will find check to cover registration at $5.00 per person

( ) Reserve me a room in Watauga Hall

( ) Make Hotel Reservations for Me at _____

Make checks payable to:

Division of College Extension

Mail this form to:

Division of College Extension
Box 5125
State College Station
Raleigh, N. C.

Fees paid in advance by persons unable to attend will be refunded, if requested prior to the close of the conference.

PROJECT VI - DAIRY MANUFACTURING

In the plan of work for 1955 it was observed that the trend in dairying seemed to be towards fewer but larger dairies. This has been true to a large extent but the more progressive smaller dairies have stepped up their sales programs and are still playing an important role in the Dairy Industry of North Carolina. In fact the Industry as a whole seemed to "calm down" and get down to business in the year 1955. This can be verified somewhat by an 8.5 per cent increase in milk consumer sales in the first ten months of 1955 over the first ten months of 1954. This is a sizable increase and a very healthy situation, particularly in view of the fact that production was up only approximately 3.5 per cent for the comparable period.

In order to report on the year's work of 1955, the various goals selected at the beginning will be listed and elaborated upon.

Goal No. 1: To assist twelve or more small dairy plants to establish adequate and proper records, thereby giving them information to increase efficiency and reduce costs.

It has been noted in most businesses, that the smaller the business, the more prevalent the lack of records. Instead of records, the owners depend on their memories. The Dairy Industry is no different from other businesses. Therefore, it was felt in view of the present trend of small to large dairies that some effort should be exerted to assist the small dairies to help themselves. Thus this project of assisting small dairy plants (those that process less than 1000 gallons of milk per day) was instigated.

The number of dairies (12) was selected because the project was to be done in cooperation with a commercial company, The E. B. McClain Company of Memphis, Tennessee, and twelve was the minimum number they would consider handling.

The project consisted of having the E. B. McClain Company prepare a manual whereby the plants could report each month the costs and amounts of milk bought and sold, and the cost of labor, materials etc. This data was to be sent in to the McClain Company which would analyze and prepare a cost comparison for each participating dairy. The comparison would show the costs of the particular dairy reporting as compared to the other dairies. In no case would one dairy know the costs of another.

The progress on this project was slow, as was anticipated. Forty-two dairy plants were contacted; sixteen by personal visits and the others by letter. Each of the sixteen plants visited indicated interest at the time of the visit but failed to "come through" when they were asked by letter to state definitely whether or not they were interested. In fact only four plants indicated that they would participate.

It was felt, however, that the project had merit and will be continued into 1956. The idea in 1955 was to "plant the seed" so to speak and then go back later after they had had time to think it over. (Exhibit A shows the number of plants contacted).

Goal No. 2: To give lectures, demonstrations and provide a "trouble shooting" type of service on the proper procedure for making cottage cheese.

This year the program consisted of bringing in a nationally known figure to give demonstrations on the proper procedure of making cottage cheese. Members of the college and dairy extension assisted in the lectures and demonstrations. Two meetings were held, one in Raleigh and one in Charlotte, with an attendance of 26. This is a rather large representation when it is noted that there are only 25 to 30 plants in the state that make cottage cheese. A copy of the program for the clinic is enclosed (Exhibit B).

In addition, personal assistance was given to some ten (10) plants on cottage cheese problems or activities. This type of service, in most cases, does the most good immediately, but of course, it has to be limited because of the time factor.

Goal No. 3: To increase the per capita consumption of buttermilk and cottage cheese in North Carolina.

This project over the years has been most fruitful. The participation and interest has been extremely good, particularly in the past two or three years. It is felt that this interest is due a great deal to the fine cooperation among the members of the dairy industry and their State College. It is due also to the fine spirit of cooperation among the various supply agencies, the Trade Associations and the College. This is mentioned to partially explain why the total cottage cheese production in North Carolina has increased 208% since 1949. (This was the first year a cottage cheese clinic was held at the college). The production for the total curd (curd & creamed) for the years 1949-54 are shown as follows:

Year	Pounds	Increase (Pounds)	Increase (Per cent)
1949	1,730,000	-	-
1950	2,543,000	813,000	47
1951	2,772,000	229,000	9
1952	3,716,000	944,000	34
1953	3,863,000	147,000	4
1954 (Pre.Est.)	5,321,000	1,458,000	38
1949-54		3,591,000	208

In the past, the college and the extension service have participated in some cottage cheese promotion work by other organizations but until this year

have not had a program of their own. This year at the direction of the Director of Extension, a Cottage Cheese Committee was appointed to promote the consumption of cottage cheese in North Carolina. The committee consisted of the following: Miss Jean Anderson - In Charge of Publicity of Program

Mr. A. D. Seale - Agricultural Economist

Miss Jo Earp - Extension Nutritionist

Mr. R. B. Redfern - Dairy Extension Specialist - Chairman

This committee met and worked out a schedule of work for the year. The following is the results of their work:

1. Letters to Home Agents (Exhibit D) including Cottage Cheese Facts (Exhibit E) and A Home Method of Making Cultured Buttermilk and Cottage Cheese. (Exhibit F)

2. (A) T. V. Programs

1.	15 Minutes	Miss Jo Earp	March
2.	5 Minutes	R. B. Redfern	February 28
3.	15 Minutes	R. B. Redfern	August 15
4.	15 Minutes	R. B. Redfern	October 10 (5 Min. plug for Cottage Cheese)
5.	5 Minutes	Miss Virginia Wilson	November
6.	5 Minutes	Miss Mary Morgan	December

(B) Radio Programs

1.	10 Minutes	R. B. Redfern	March 7

(C) Newspaper Releases

1. Announcement of Cottage Cheese Clinic - R. B. Redfern, January 25
2. How Consumption of Cottage Cheese Will Increase the Returns to Dairy Farmers of North Carolina, R. B. Redfern, February 7
3. Cottage Cheese - A Low Cost Source of Protein, A. D. Seale, Jr., March

(D) Bulletins Prepared

1. How to Make and Use Cottage Cheese, S. Virginia Wilson, R. B. Redfern
2. How to Make and Use Cultured Buttermilk, S. Virginia Wilson, R. B. Redfern.
   Note: These bulletins are still in the hands of the printer but are promised by February of 1956.
3. In addition R. B. Redfern and Miss S. Virginia Wilson were judges for Dairy Foods Demonstrations in the State District Elimination Contests (6 Districts) at which time the importance and value of cottage cheese was emphasized. This was an attempt to "get to" the youth of North Carolina.

4. Also, during June R. B. Redfern gave several June Dairy Month talks at which time he stressed the value and importance of cottage cheese in the diet.

Goal No. 4: To inform as many high school graduates as possible of the advantages and merits of the Dairy Manufacturing Industry.

Again, as in previous years, the former graduates of the dairy industry, the county agents, and the Vocational Agriculture teachers were contacted with reference to getting more students interested in Dairy Manufacturing. As usual the project was done in cooperation with the North Carolina Dairy Products Association which sponsors the scholarship program now available. The scholarships consists of two $500.00 freshmen scholarships, two $300.00 sophomore scholarships and two $200.00 junior scholarships.

This year, one each of the freshmen and sophomore scholarships was awarded and two of the junior scholarships. There is still a need for more participants in the scholarship program at the freshman and sophomore levels, but it is felt that eventually the scholarship program will be completely filled at all levels every year.

The enclosed bulletin (Exhibit C) in addition to an announcement of the scholarship program was sent out in cooperation with the North Carolina Dairy Products Association.

Goal No. 5: To help keep the dairy plant personnel current with the many changes in the dairy industry so as to enable them to face their problems squarely and make sound decisions based on scientific facts.

This goal was rather broad in scope and could cover a multitude of things. However, the idea behind this was to keep County Agents, dairy processors and dairy farmers informed of the changing events as they come about. For example three significant instances are noted where the extension service made contributions in 1955. They follow:

a. Prepared information on the cost of off-flavors to Dairy Farmers of North Carolina in 1954 and prepared to get the same information in 1955. (Exhibit G)

b. Prepared information on current problems of the dairy farmers to send to dairy plant processors to reproduce for their house organs.(Exhibit H)

c. Prepared a temporary bulletin on Bulk Farm Handling of Milk.(Exhibit I)

Note: There was a great deal of interest shown in this subject after the year began which called for immediate action. A permanent type bulletin with illustrations is now in the hands of the printers.

In addition to the above, assistance was given to various dairy plants on developments pertaining to equipment designed to remove off-flavors in milk. There was a great deal of interest in this subject in the latter part of 1955 because the apparent increase of off-flavors in the fluid milk of North Carolina. In 1955, some 5 dairy plants purchased equipment designed to remove off-flavors in fluid milk. Each of these plants had to be visited and assistance given on analyzing the job to be done and the equipment required to do same. It is anticipated that 8 to 10 more plants will purchase this type of equipment in 1956.

Goal No. 6: To assist five or more plants with changes in building and equipment. (This will be more the "trouble shooting" type of calls - in other words the plants will be assisted when the owners feel they are financially able to make such changes.)

As stated in the goal, no specific program was planned on this project because it was a matter for the plant owners to decide, rather than the extension personnel. Some nine dairy plants were given this type of assistance in 1955. Exhibit J shows the layout for one of the ice cream plants

that was given assistance.

Other Work Completed not Listed Under Goals

a. "Trouble shooting" type of service to dairy farms to determine causes of off-flavors.

b. Judging Dairy Foods Demonstration in 6 State 4-H District Elimination contests.

c. Giving assistance and preparing reports for State Institutions on practicability of purchasing Bulk Farm Tanks.

d. Assistance given to Marvin E. Senger in teaching Babcock test for DHIA short courses. A copy of this work is listed under DHIA projects.

e. Assistance given to North Carolina Dairy Products Association in preparing and carrying out programs such as Plant Superintendents and Accountants Council, Sales and Merchandising Clinics, Annual Meeting of the North Carolina Dairy Products Association, and Summer Meeting of the North Carolina Dairy Products Association.

f. The college and extension personnel met with those dairies now participating in the McClain Cost Comparison and assisted them in finding ways to introduce efficiencies to reduce costs. This group of 12 dairies met twice in 1955 and agreed to meet four times in 1956 to continue to study their operations for ways of reducing costs.

Publications and Visual Aids Prepared During 1955

There were no publications included in the plan of work for 1955, however, three were prepared. The temporary bulletin on Handling Milk in Bulk is shown in Exhibit I. The permanent bulletin on this and two bulletins on Cottage Cheese and Cultured Buttermilk are in the hands of the printers.

NATURE OF SERVICES RENDERED IN DAIRY MANUFACTURING	NO. SEPERATE CONTACTS	
Quality Control on the Farm	16	14
Creamery and Cheese Manufacturing Problems	6	5
Ice Cream Manufacturing Problems	4	3
Market Milk Problems	2	6
Quality Dairy Products Conference	10	9
Dairy Plant Remodeling Conference	10	12
Dairy Plant Equipment Advice	26	20
Dairy Plant Record Analysis	18	20
Dairy Refrigeration Problems	1	0
Dairy Retail Problems	2	1
Dairy Building Planning	21	21
Dairy Organization (new plants)	4	6
Dairy Plants Managerial Problems	18	15
Milk Supply (Grade A and Grade C)	9	5
N. C. State Fair Work	2	9
Technical Plant Control	22	20
College Conferences, Dairy Work	7	10
General Dairy Industry Problems	8	10
Dairy Plant Efficiency Problems	15	15
Supervising and Instructing Short Courses	7	19
Promotion of Dairy Industry	10	5
Extension Staff Conferences	12	9
Dairy Short Course Planning Conferences	3	5
Cottage Cheese Clinic and Work	17	15
Bulk Handling of Milk	19	25
Radio Program	2	3
Dairy Plant Personnel	6	5
Milk Industry Foundation Meeting	1	1
Agents Conference	2	1
School Lunch Program Meetings	3	0
Work on off-flavor removal Equipment	5	12
N.C. Dairy Products Sales and Merchandizing Clinic	5	2
N.C.Dairy Products Association Meetings	10	8
American Dairy Science Meetings	2	2
N.C. Dairy Technology Society Meetings	12	12
Annual Meetings Dairy Plants	4	2
Promotion of Dairy Products Consumption in Northwest N.C. T. V. Programs	7	0
Dairy Marketing Problems	5	10
Promotion of Consumption of Dairy Products	2	3
~~Tenn. Dairy Products Ass'n. Meeting~~	~~1~~	
Dairy Fieldmens & Sanitarians Conference	4	4
Judge Dairy Foods in Regional 4-H Contests	7	0
Plant Superintendents and Accountants Council Meetings	2	2
~~V.P.I. Ice Cream Conference~~	~~2~~	
~~U.S.D.A. (Nation Wide Marketing Problems)~~	~~4~~	
~~U.S.P.H.S. (Score Card Revision)~~	~~5~~	

Exhibit A

Names of Dairies Contacted With Reference
to Small Dairy Cost Comparison Service

May 1955

Balentines Dairy	Varina, N. C.
*Pine Hill Dairy	Reidsville, N. C.
*Hood Bros. Dairy	Goldsboro, N. C.
*Meadow Brook Dairy	Rocky Mount, N. C.
*Mooresville Creamery	Mooresville, N. C.
*Hiwassee Dairy Farm	Huntersville, N. C.
*Haynes Dairy	Lincolnton, N. C.
*Arcadia Dairy Farms	Asheville, N. C.
*Clinton Dairy Products	Clinton, N. C.
*Graham Bros. Dairy	Mt. Ulla, N. C.
Nantahala Creamery	Franklin, N. C.
*Myers Dairy	Monroe, N. C.
Robinson's Dairy	Burnsville, N. C.
Hall's Dairy	Murphy, N. C.
Anderson's Dairy	Mars Hill, N. C.
Ideal Dairy Farms	Hamlet, N. C.
Rutherford Dairy	Spindale, N. C.
*Ideal Dairy	Taylorsville, N. C.
Klondike Dairy	Elkin, N. C.
*Hillside Dairy	Boone, N. C.
Edminston Dairy	Mt. Ulla, N. C.
West View Dairy	Salisbury, N. C.
Caswell Dairy	Yanceyville, N. C.
Clover Hill Dairy	High Point, N. C.
J. R. Swing's Dairy	Lexington, N. C.
*Clear Springs Dairy	Concord, N. C.
Springside Dairy	Charlotte, N. C.
White Oak Dairy	Charlotte, N. C.
Guy Moose Dairy	Albermarle, N. C.
Casey's Dairy	Stonewall, N. C.
Echo Dairy	Wilmington, N. C.
*Woodside Dairy	Boomer, N. C.
Anthony Dairy	Gastonia, N. C.
*Clineland	Cherryville, N. C.
Creamline Dairy	Dallas, N. C.
Glenwood Dairy	Cherryville, N. C.
Granada Dairy	Granite Falls, N. C.
P. G. Howe Dairy	Gastonia, N. C.
Summey Dairy	Dallas, N. C.
Tripletts Dairy	Lenoir, N. C.
Silver Cup Dairy	Laurinburg, N. C.
*M. A. Rhyne & Son Dairy	Gastonia, N. C.

*Contact made by personnal visit

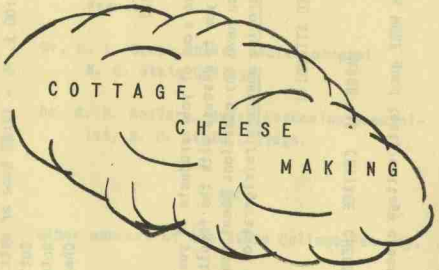
Exhibit B

A Demonstration

and

Discussion

of



January 24-25, 1955
N. C. State College
Raleigh, N. C.

January 26-27, 1955
Southern Dairies, Inc.
Charlotte, N. C.

Sponsored By

The Dairy Manufacturing Section
of N. C. State College

in cooperation with

The N. C. Dairy Products Assn.

A Program on

COTTAGE CHEESE MAKING

GENERAL INFORMATION

So that you, the cottage cheese manufacturers of North Carolina, may sharpen your techniques in the production of cottage cheese and culture making, the Dairy Manufacturing Section of N. C. State College in cooperation with the N. C. Dairy Products Association, are offering two cottage cheese demonstrations for you during January, 1955.

SUBJECT MATTER

The discussions and demonstrations will include selection of cultures, selection of milk, carrying cultures, the relative merits of liquid and dry cultures, how many cultures should be carried, activity tests, amounts of innoculant and other questions you may have pertaining to cottage cheese and cultures. It is planned that the entire procedures of culture carrying and cheese making will be discussed and demonstrated.

LOCATION AND DATES - NO. 1 DEMONSTRATION

N. C. State College Creamery

January 24th - 2:00 P. M. - 6:00 P. M. - Discussion of cultures, cottage cheese making, preparation of cultures and setting of milk. (long time set)

January 25th - 7:00 A. M. - 6:00 P. M. - Cutting and processing long-time set.

ALSO, a demonstration and discussion of the short-time method of cottage cheese making.

LOCATION AND DATES - NO. 2 DEMONSTRATION

Southern Dairies, Inc., 500 Dalton Ave., Charlotte 6, N. C.

January 26th - 2:00 P. M. - 6:00 P. M. - Discussion of cultures, cottage cheese making, preparation of cultures and setting of milk. (long time set).

*January 27th - 7:00 A. M. - 12:00 Noon or until finished.
Cutting and processing long-time set.
*Note - only one set (The long-time) will be done in Charlotte because of lack of vats.

WHAT YOU SHOULD BRING!!

Just yourself and some of your products if you wish them examined and discussed. An opportunity will be provided for you to discuss with the faculty present, your cultures, buttermilk or cottage cheese. Therefore, if you have any questions about your products please refrigerate them and bring them along. DO NOT fail to provide adequate refrigeration for your products.

MAKE YOUR PLANS NOW TO ATTEND!!!

MARCH IS COTTAGE CHEESE PROMOTION MONTH!!

This year, let's make MORE good tasty cottage cheese than we ever have before.

FACULTY

Mr. R. L. Ziegler, Ziegler & Sons, Topeka, Kansas

Dr. M. L. Speck, Dairy Bacteriologist, N. C. State College

Dr. R. B. Redfern, Dairy Extension Specialist, N. C. State College.

AND

Other members of the State College Faculty.

ADDITIONAL INFORMATION

No arrangements have been made for housing because we believe all of you are familiar with both locations. We would advise making prior reservations at one of the various motels or hotels located in each town.

If you have any other questions concerning this program please contact:

R. B. Redfern
Dairy Extension Specialist
N. C. State College
Raleigh, N. C.

Exhibit C

a career....

As a young man starting out to earn your own living, one of your most important decisions is to choose a career.

Maybe you're thinking of learning a trade like an electrician, or running your own business, or becoming a salesman, or going into farming, or entering a profession like engineering.

But whatever your choice, you need four basic qualities to make good:

Ambition

Intelligence

Willingness to work

Ability to get along with people

We all have a certain amount of these abilities born in us and we can all develop them about like we want to. And we need them to succeed in our work, whether we pick a job that requires college training or not.

So much for what you contribute to your work. Now what things have you a right to expect from your job, whatever it is?

Ample opportunity for employment

Interesting work

Security

Chance for advancement

You'll find all these important requirements among the many different jobs in the dairy manufacturing industry. That's the business where fluid milk is bottled or processed into ice cream, cottage cheese, powdered and condensed milk, buttermilk, cheese, butter and many other nourishing dairy foods, It's a vital business serving the health of our nation.

In this folder you'll find a birds-eye view of your opportunities in the dairy manufacturing industry. We hope you'll take advantage of them.

opportunities....

PRODUCTION WORKERS-- you might make ice cream, butter, cheese, dried, condensed, or evaporated milk; or run a bottler or pasteurizer; or be a plant sanitarian or engineer.

SALES AND DISTRIBUTION --here you'd work as route salesman, sales or advertising manager, distributor, or sell dairy supplies and equipment.

OFFICE WORK -- among these important jobs are accountant, auditor, purchasing agent, bookkeeper, and many others.

MANAGEMENT -- most of us, after enough experience, look forward to becoming a general plant manager, plant superintendent, branch manager, safety director, or other supervisory positions.

REGULATORY -- within the plant you might work as a chemist, bacteriologists, or inspector to keep your company's products as top quality; outside the plant you'd work in a government public health agency.

RESEARCH -- your opportunities in this rather scitific field lie in searching for new by-products of milk and new processing methods, or becoming a college teacher or dairy plant consultant.

training....

At N. C. State College, you can get excellent training in any of the six fields of dairy manufacturing. You'll have plenty of freedom to choose from a wide variety of courses to give you the training you want. To help chart your plans, each student has his own faculty adviser and together they select the best courses to suit each student's interests. You'll find the teachers friendly and helpful.

Your freshman year is pretty well filled with courses that provide a broad foundation for more specialized work taken later. During your sophomore year, you'll get your first look at dairy manufacturing. But you'd continue to broaden your foundation with courses in bacteriology, chemistry, botany, physics, economics, and public speaking.

For your last two years, you'd probably take most of the 14 courses in dairy manufacturing like market milk, making butter, cheese, ice cream, dairy chemistry, dairy bacteriology, dairy plant management, judging dairy products, and dairy technology.

Then you'd be virtually free to pick your own courses in business management, accounting or sales as applied to a dairy plant, or dairy plant engineering, or dairy manufacturing research. You can easily branch off into any of these related fields by choosing the proper courses.

The important thing is that you can get A-1 training in dairy manufacturing at N. C. State College and the course of study is highly flexible to suit your own special interests.

Prepared and distributed by
N. C. State College and N. C.
Dairy Products Assn.

in Dairy Manufacturing offers YOU

OPPORTUNITY--The dairy manufacturing industry is crying for college-trained men. In North Carolina alone are 200 dairy plants; each of them could use at least one more trained person.

STABLE BUSINESS--Dairy products make up more than 25% of our average American diet. We now have 45% more children under 10 years of age than in 1940 and our "baby crop" is still increasing. Economists say we can expand per person use of dairy products by 36%.

GOOD INCOME--Dairy manufacturing graduates start out in the same salary range as assistant county agents, vocational agriculture teachers, and textile and engineering graduates. Salary increases come as you become more skilled and take on more responsibility.

GOOD EMPLOYEE BENEFITS--You'll find excellent working conditions in modern plants, paid vacations and holidays, and in many cases group hospitalization insurance and profit sharing plans.

CHANCE FOR ADVANCEMENT--Most plants prefer to promote their own men from within the organization and there's ample opportunity to move up according to your own ability and performance.

INTERESTING WORK--New products and processes are being developed so fast that you'll always find stimulating, challenging situations in your dairy manufacturing work. And in serving the health needs of the community, your work would be respected.

SECURITY--Considering the basic demand for milk products in our diet and the present employment situation in the industry, the whole picture adds up to a long-time stable future for you in the dairy manufacturing industry.

Exhibit D

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 ...ED STATES DEPARTMENT OF ...CULTURE COOPERATING

EXTENSION SERVICE

February 12, 1955

Dear Home Demonstration Agents,

March is cottage cheese promotion month. We want to do everything possible to get across the idea that cottage cheese is a good food and not something used to make a salad look good.

We are all aware of the problem in North Carolina. The 1950 census shows that 20% of our people aren't getting daily the foods they need. One of the foods most apt to be lacking in diets is milk. Cottage cheese is a concentrated form of milk.

Enclosed you will find enough copies of a sheet prepared by the Cottage Cheese Committee at State College to give 1 copy each to:

County H. D. Agents and Assistants
Farm Agents and Assistants
H. D. Club Food and Nutrition Leaders
Home Ec. Teachers
Lunch room managers.

One copy of "A Method of Making Cultured Buttermilk and Cottage Cheese in the Home" is enclosed. Address requests for additional copies to R. B. Redfern, Dairy Extension Specialist, State College Station, Raleigh, N. C.

We are suggesting that you send this material with any ideas that you might have and try on the county level to push the idea on the radio, T. V., in the news papers and other contacts that you make.

We would be very interested to hear how your program turns out. If you think the information is helpful or any suggestions of additional material that you would like in the bulletin being worked up for a later date, please let us know.

Your cooperation in getting this information to the people is greatly appreciated.

Sincerely,

Jo Earp
Jo Earp - Extension Nutritionist

A. D. Seale, Jr.
A. D. Seale - Dairy Marketing Spec.

R. B. Redfern
R. B. Redfern - Dairy Extension Spec.

Exhibit E

COTTAGE CHEESE FACTS

Cottage cheese is a concentrated form of milk. It like meat is an excellent source of the best quality protein which everybody needs to build, repair, and keep body tissue in good condition.

The average man can obtain about 1/4 of his daily protein requirements from a 3 oz. serving of cottage cheese. This makes cottage cheese desirable for growing boys and girls. It is also an ideal food for adults.

You also find calcium, needed to build and maintain strong teeth and bones, to help regulate the heart beat and to assist in clotting of blood. Vitamin A to keep eyes in good condition and build resistance to infection. Riboflavin of the B family is the "keep young" vitamin. It also promotes a good appetite, calm nervous system and clear skin.

Cottage cheese is easily digested and readily used by the body. It is wonderful for those who wish to lose weight because it is high in nutritive value and low in calories.

PERCENTAGE OF DAY'S NEEDS FURNISHED BY 3 OZ. SERVING OF COTTAGE CHEESE

	Calories	Protein	Calcium	Vit. A	Vit. B_2
3 Oz. Cottage Cheese Contains	81	Gm. 16.5	Gm. .081	I.U. (30)	Mg. .27
Days Needs of Girls 13-15 yrs.	2500	80	1.3	5000	2.0
3 oz. Cottage Cheese Gives % of Day's Needs	3%	21%	6.2%	.6%	13.5%
of Boys 13-15 yrs.	3200	85	1.4	5000	2.1
3 oz. Cottage Cheese Gives % of Day's Needs	2.5%	19.4%	5.8%	.6%	13%
Women 25 Years	2300	55	0.8	5000	1.4
3 oz. Cottage Cheese Gives % of Day's Needs	3.5%	30%	10.1%	.6%	19.5%
Men 25	3200	65	0.8	5000	1.6
3 oz. Cottage Cheese Gives % of Day's Needs	2.5%	25.4%	10.1%	.6%	17%

In addition to its food value, cottage cheese is a very versatile food. It can be used in any meal during the day. Why not start off by using this nutritious food with your eggs for breakfast.

RECIPES

Cottage Cheese Omelet (about 4 servings)

6 eggs, separated
1/2 t. salt
1/4 t. pepper
1 C. cottage cheese
2 T. chopped pimento
2 T. butter

1. Beat egg yolks, salt and pepper until foamy.
2. Add cottage cheese and pimento.
3. Fold in stiffly beaten egg whites.
4. Melt butter in heavy frying pan.
5. Add eggs and cook over low heat until slightly brown on bottom (about 5 min.)
6. Put pan in moderate oven (350°F) and bake about 10 min. until firm.
7. Fold in half and serve immediately.

OVER

For a lunch sandwich or salad, cottage cheese combines nicely with almost any type of food. A few examples are:

Cottage Cheese Sandwich Spreads

1. Mix half cottage cheese and half apricot pulp (force through a siever or ricer).
2. Mix cottage cheese with carrots and onions.
3. Cottage cheese, minced cooked bacon and nuts.

Applesauce Cottage Cheese Salad

1 pk. lime-flavored gelatin
1 C. water
2 C. unsweetened applesauce
1 C. Cottage Cheese

1. Dissolve lime gelatin in water.
2. Fold in applesauce and cottage cheese.
3. Pour into individual molds.
4. Put in refrigerator until firm.
5. Unmold on lettuce and serve with mayonnaise

For dinner a main dish made with cottage cheese is a grand meat substitute.

Cheese Stuffed Peppers

6 green peppers
1 1/2 cups cottage cheese
2 1/2 cups cooked rice
1 egg
salt and pepper
buttered soft bread crumbs

Wash peppers, cut off tops and remove stems, seeds and white fibre. Cook peppers and the tops in boiling salted water for about 10 minutes. Drain. Mix the cottage cheese, rice, slightly beaten egg, salt and pepper to taste and the pepper tops chopped coarsely. Fill the peppers with this mixture. Top with the buttered bread crumbs and place in a buttered baking pan. Bake in a moderately hot oven (375 degrees F.) for about 25 minutes. Six servings.

Desserts that are nice for lunch or dinner.

Cheese Cake

1 six ounce package swieback or graham crackers
1/2 cup butter or margarine
1 1/2 cups sugar
3 cups cottage cheese
4 eggs
1/2 cup cream
1/2 teaspoon salt
4 tablespoons flour
2 tablespoons lemon juice
1 1/2 teaspoons grated lemon rind

1. Roll the swieback or graham crackers into fine crumbs and mix with the melted butter or margarine and 1/2 cup of sugar.
2. Pack all but 1/2 cup of this mixture on the bottom and sides of a well-greased 9-inch spring form pan.
3. Press the cottage cheese through a fine sieve.
4. Combine the eggs and the remaining 1 cup of sugar and beat until light.
5. Add the cream, salt, flour, lemon juice, lemon rind and cottage cheese and mix well.
6. Pour into crumb lined pan and sprinkle lightly with the remaining 1/2 cup cracker crumbs.
7. Bake in a moderate oven (325 degrees F.) for 1 hour.
8. Turn off the heat and leave in the oven for 1 hour.
9. Remove from oven and allow to cool. Serves 10.

Prepared by Cottage Cheese Committee: Jo Earp, Extension Nutritionist, Jean Anderson, Home Economics Editor, A. D. Seale, Jr., Dairy Marketing Specialist, and R. B. Redfern, Dairy Extension Specialist, Chairman.

Exhibit F

A METHOD OF MAKING CULTURED BUTTERMILK AND COTTAGE CHEESE IN THE HOME

Prepared by
Dr. R. B. Redfern
Dairy Extension Specialist

Office of Dairy Extension

March, 1954 D.M.E. No. 1

N. C. State College of Agriculture and Engineering of the University of North Carolina and U. S. Department of Agriculture, Co-operating, N. C. Agricultural Extension Service, D. S. Weaver, Director, State College Station, Raleigh, N.C. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

Making Cultured Buttermilk in the Home
by
Dr. R. B. Redfern, Dairy Extension Specialist

Utensils and Supplies Needed

Double boiler, or Home pasteurizer
Tablespoon, quart milk bottle, or fruit jar
Thermometer
Fresh whole milk or skim milk
Plenty of boiling water for scalding utensils
Good, fresh buttermilk to use as starter

1. Select one quart of good fresh whole milk, or skim milk.

2. Use a clean, double boiler that has been scalded with boiling water. Put milk in top section of boiler, water in lower and heat until milk reaches 180° - 185° F. Then put a cover on boiler and let the milk stay at this temperature for 30 minutes. The reason for using a double boiler is to heat the milk uniformly. (Stir the milk at intervals as it is heating, using a clean spoon that has been rinsed in boiling water). Home pasteurizers are also used for pasteurizing milk. These can be purchased from Sears & Roebuck, Montgomery Ward or hardware stores.

3. After the milk has heated, cool it to 70° F. using tap water or ice water in the lower section of boiler. Cool no lower than 68° F.

4. At this point, transfer the milk to a clean, scalded quart bottle, or leave it in the double boiler. To this 70° milk, add 2 tablespoons of fresh buttermilk and mix thoroughly with a clean spoon. (This spoon should have been submerged in boiling water and allowed to air dry.) Put cover on boiler or put cover on quart bottle and allow to set from 12 to 16 hours (over night) undisturbed, at about 70° F. or room temperature. In this length of time the milk should have coagulated or formed "clabber".

5. After the milk has coagulated or formed "clabber", use a clean spoon to break the curd or clabber, and cool to 40° or 50° F. with ice water. (This is your buttermilk.)

   Now if you like the taste of the buttermilk you have just made, some of it may be saved to make more buttermilk. However, it should not be used for this after it is more than three days old.

   One quart of milk was selected to give an idea as to how much buttermilk to add. If two quarts are desired then use 4 tablespoons of buttermilk, etc.

   If whole lactic buttermilk is desired, whole milk should be used instead of skim milk to begin with.

   Sanitation is of great importance. Clean utensils that have been scalded in boiling water and air-dried should be used where possible. The use of good sanitation practices helps prevent unclean flavors in buttermilk.

Making Cottage Cheese in the Home
by
Dr. R. B. Redfern, Dairy Extension Specialist

Utensils and Supplies Needed

Double boiler or Home Pasteurizer
Thermometer
Tablespoon
Knife or wire egg beater
Cloth bag or cheese cloth
Salt
Junket Rennet tablet
Good, fresh buttermilk to use as starter
Boiling water for scalding utensils

1. Select 1 gallon of fresh, clean flavored, pasteurized skim milk. This 1 gallon should make about 1 1/2 pounds of cottage cheese. If raw milk is available, it may be pasteurized by heating to 143° F. and holding for 30 minutes. The milk should be cooled immediately to 40° F. if it is not used immediately, or to 72 - 75° F. if it is made into cheese immediately. A double boiler with milk in the upper compartment and water in the lower works very satisfactorily. Home Pasteurizers are also used. These can be purchased from Sears & Roebuck, Montgomery Ward or hardware stores.

2. Add one-third to two-thirds cup of good, clean flavored sour milk (cultured buttermilk) to this 1 gallon of skim milk that has been tempered to 72 - 75° F. Mix the sour milk or buttermilk into the skim milk with a clean spoon that has been submerged in boiling water, and air dried. Next dissolve one-fourth junket rennet tablet in two tablespoons of cold water and add one tablespoon of this solution (discard remainder) to each gallon of milk used. Stir while adding. Cover the container and let the milk set undisturbed for 12 to 16 hours (overnight usually works out satisfactorily) at this 72 - 75° F. At the end of this time it should have coagulated or formed a firm, livery curd. (Watch for formation of whey or breaking of curd away from edges of container to determine when this has been done.)

3. When this skim milk has formed a firm curd, then it is ready for cutting. Use a clean, long-bladed knife, egg beater, or butter cutter to cut the curd into about one inch squares. The wire type egg beater or wire butter cutter, will enable you to do this very easily.

4. After the curd is cut, it is then heated very slowly to 100° - 115° F. (A quart of 100 - 110° water may be used to help raise the temperature at first.) The time required to reach 100 - 115° F. should be about 30 minutes. As it is heating, the curd should be stirred very gently at about 5 minute intervals. The temperature to which the curd is heated determines the dryness of the curd. The higher the temperature, the dryer the curd.

5. When the curd is finished cooking, the whey is then ready to be drained. To do this, pour the curd into a clean cheese cloth sack or into any other type of cloth that will allow the whey to drain. Hang the sack where it can be drained adequately, and at intervals raise and lower the sides of the cloth so that it can drain more freely. This whey should nearly cease to flow in about 15 or 20 minutes.

6. After the curd has drained, it is then washed in two successive waters of about 50° F. and allowed to drain for several minutes. (At this point you will have to suit your own taste. If you like dry cheese, then let it drain longer.)

7. The next two steps will also be to your own taste. Some people like cheese very salty, others do not. One or two teaspoons to 1 gallon of milk (it is now curd) is about the quantity desired. Sprinkle the salt over the curd and work it in with a clean spoon. You may now eat the cheese or if you desire, you may add a small amount (about 1/3 cup) of fresh cream and have creamed cottage cheese. (This cream should be pasteurized, because cottage cheese spoils easily.)

Exhibit G

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

Memorandum To: The Dairy Processors of North Carolina

Subject: A Report of Off-Flavors

Last year you helped us obtain some information pertaining to the amount of milk that was rejected by dairy plants in North Carolina. We heard from enough of you to account for 85% of the Grade A milk in North Carolina, and the following is the data received:

Milk Rejected for Off-Flavors in 1954

Unit	March	April	May	June	Other Mos.	Total
Lbs.	954,574	1,711,890	861,032	363,436	1,006,630	4,897,562

You estimated the total value of this milk to be $257,878.42. In other words, according to your figures, the producers would have received this amount for their milk had it been of high quality. This amounts to $5.26 per cwt.

If all of this milk had been placed in Class I at $6.25 per cwt, the loss would have been $306,098; in Class II at $4.50 per cwt, the loss would have been $220,390; in the lowest classification, Class III, at $3.00 per cwt, the loss would have been $146,927.

The dairy farmers are not the only losers. You are too, since it is known that consumers reduce their milk consumption considerably from the middle of March through June. This reduction begins long before school is out and before hot weather should increase consumption of fruits and beverages other than milk. The only reasonable explanation is that the customers detect some change in the flavor of their milk. We hope that you will advise your producers and help prevent this loss. Copies of the enclosed bulletin which may be obtained from your County Agent will assist you in doing this. Please see him if you desire copies.

We appreciate very much your assisting us on this project and you can be assured that steps have been made to get the research machine in action to remedy this situation. However, we need more facts to stimulate interest in this research. Therefore, we would like to ask you to keep a record also for the year 1955 so that we may see how we are progressing. Enclosed is a form that will assist you in keeping this data. We hope you will give us the same fine support that you gave last year and aid us in getting an answer to this very definite problem.

Sincerely,

R. B. Redfern

R. B. Redfern,
Dairy Extension Specialist

RBR/bjw

Encl.

MILK REJECTED FOR OFF-FLAVORS-1955

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1st												
2nd												
3rd												
4th												
5th												
6th												
7th												
8th												
9th												
10th												
11th												
12th												
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21st												
22nd												
23rd												
24th												
25th												
26th												
27th												
28th												
29th												
30th												
31st												
TOTAL												

NOTE: Please be sure to convert your gallons to lbs. There are 8.6 lbs. per gallon. Please keep one of these copies for your record and send the other to us.

NAME OF DAIRY _____

ADDRESS _____

BY WHOM _____

Prepared by Dairy Extension Section
N. C. State College

Exhibit H

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF NORTH CAROLINA

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

EXTENSION SERVICE

Dear Fellow Dairymen:

Sometime ago we wrote you a letter asking if you were interested in Topics of Interest to your Producers which could be included in your house organ. A sufficient number of you indicated that you were, so we are sending the first issue of this project which explains the School Lunch Program, a very vital program to our dairy industry. We believe the article is self-explanatory. In the future you may expect articles on Feeding, Care and Management of Dairy Cattle, How to Produce Quality Milk, Information on Artificial Breeding, Current Trends in Production and Marketing and other items of interest.

We would also like for you to write in and advise us of any specific subjects that you would like to have discussed. If you do this, we will know what you desire. With your help we firmly believe that these News items will furnish timely, informative material which will serve to promote good will among the members of our dairy industry as well as furnish them with up-to-date information.

Sincerely yours,

George Hyatt Jr.
George Hyatt, Jr.
In Charge, Dairy Extension

R. B. Redfern
R. B. Redfern
Dairy Extension Specialist

GH/RBR:mtp

Encl.

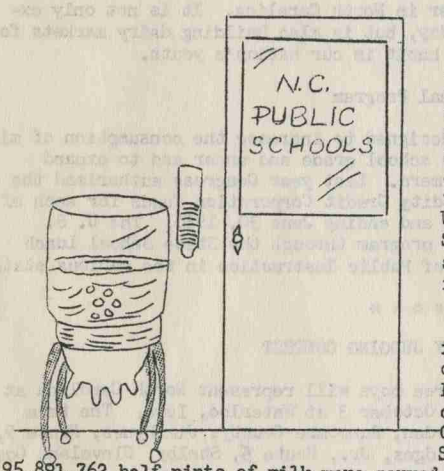
DAIRY EXTENSION OFFICE September, 1955

NORTH CAROLINA'S SPECIAL SCHOOL MILK PROGRAM

By
Lloyd Langdon, Executive Vice-President
N. C. Dairy Product Association

What does this mean to you as dairy farmers? It means that your children will have the opportunity of consuming all the milk they desire at school at a low cost if the school they are attending is participating in the Special Milk Program.

It means an additional market for approximately 18,750,000 pounds of Class 1 milk for North Carolina dairy farmers or an approximate 3.2% increase in fluid milk and cream sales over 1954, if the total allocation of $2,267,496 is used up during the 1955-56 school year.



The North Carolina Program

North Carolina's share of the Federal appropriation for the 1955-56 school year will be $2,267,496. This money will be used to reimburse schools for milk consumed by school children. This program is administered by the N. C. School Lunch Division of the N. C. Department of Public Instruction, Raleigh, North Carolina. Mrs. Annie W. Maley is State Supervisor of the N. C. School Lunch Program and is doing an outstanding job here in North Carolina administering the program.

The program got off to a good start in its first year. Through the splendid efforts of many people - in schools, the School Lunch officials, the dairy industry, and others - a total of 1,532 of the 2,325 North Carolina schools participated in the Special School Milk Program last year. A total of 95,891,762 half-pints of milk were served in North Carolina Schools during the 1954-55 school year as compared with 71,555,547 half-pints during the previous year of a phenomenal 74.5% increase in milk consumption.

While the program showed substantial success in this first year, it also showed opportunities for improvement. There were a total of 793 schools in North Carolina during the 1954-55 school year that did not participate in the Special School Milk Program with 455 schools not participating in either the National School Lunch Program or the Special Milk Program.

Even though North Carolina was one of the top states in the nation last year in percentage of participating in the Special School Milk Program only $861,200 of the $2,330,856 allocated for North Carolina was used - only approximately $18 million of the $50 million allocated was used for the nation as a whole.

What Can You As Dairy Farmers Do?

1. Understand the program thoroughly. Additional information may be obtained from Mrs. Anne W. Maley, State Supervisor School Lunch Program, Raleigh, North Carolina.

2. Work very closely with your local school officials in seeing that your

school is participating in the program.

3. If your school is participating in the program, check with the school officials as to the times milk is being served. There may be opportunities for increasing consumption by changing the times of serving. All milk served is reimbursable regardless of the time of day it is served.

4. Always speak well of your product to your school officials and to the public. You have the most nearly perfect food to sell. Capitalize on this opportunity.

5. This is the year of test for the Special School Milk Program. We must prove that it can succeed in making more milk available to more children. The future of this program hinges on what Congress thinks it has done for the school children and the dairy farmers of our nation. Remember this program was initiated to provide a channel of distribution for great quantities of surplus fluid whole milk by diverting it from the manufacturer of dairy products to encourage increased consumption of milk by our school children. It is providing a market for your product and should be of vital interest to every dairy farmer in North Carolina. It is not only expanding the market for dairy products today, but is also building dairy markets for the future by creating the milk drinking habit in our nation's youth.

The National Program

The Special School Milk Program is designed to increase the consumption of milk by children in non-profit schools of high school grade and under and to expand markets for the products of our dairy farmers. Last year Congress authorized the expenditure of up to $50 million of Commodity Credit Corporation funds for each of the two years beginning September 1, 1954 and ending June 30, 1956. The U. S. Department of Agriculture administers the program through the State School Lunch Division Offices of the State Department of Public Instruction in the various states.

* * * * * * *

NATIONAL 4-H DAIRY JUDGING CONTEST

A team consisting of one girl and three boys will represent North Carolina at the National 4-H Dairy Judging Contest on October 3 at Waterloo, Iowa. The team members are Peggy Ann Carroll, Route 1, Arden, Buncombe County; Jim Hynes, Route 9, Charlotte, Mecklenburg County; Charles Bridges, Jr., Route 5, Shelby, Cleveland County; and Jerry Willis, Lawndale, Cleveland County.

These four team members won a place on the North Carolina 4-H Dairy Judging team by being the four highest scorers in the finals of the North Carolina 4-H Dairy Judging Contest on August 16 and 17. Mr. Jack Krause, Assistant County Agent, Shelby, Coach of the first place county team in the State Contest, and J. D. George, Dairy Extension Specialist, will accompany the team to the national event as coaches.

The team has undergone intensive training at North Carolina State College and will receive further training en route to the National Contest.

The National Contest will include placing ten classes of animals--a cow and a heifer class in each of the five dairy breeds: Jerseys, Guernseys, Holsteins, Ayrshires, and Brown Swiss. Also, on three classes of cows the contestants will write reasons to justify their placings; and on two classes of cows they will be required to justify their placings with oral reasons.

In addition to competing in the National 4-H Dairy Judging Contest, the team members and coaches will observe part of the official judging at the National Dairy Cattle Congress and will see the many dairy exhibits on display. The expenses of the four team members and Mr. Krause will be paid by the North Carolina Purebred Dairy Cattle Association.

* * * * *

Exhibit I

HANDLING MILK IN BULK

Report No. 6 of the Dairy Marketing Committee

North Carolina State College

PREPARED BY

R. B. REDFERN, Dairy Extension Specialist
HENRY A. HOMME, Associate Professor of Agricultural Economics

JUNE 1, 1955

North Carolina State College of Agriculture and Engineering of the University of North Carolina and the U. S. Department of Agriculture, Cooperating. State College Station, Raleigh, N. C., D. S. Weaver, Director. Distributed in Furtherance of the Acts of Congress of May 8 and June 30, 1914.

HANDLING MILK IN BULK

Bulk handling of milk is much more than a farm investment. With its adoption a rearrangement of the marketing functions of the farmer, the handler, and the dealer takes place. The costs and profits of marketing milk are also redistributed, in comparison to the can system. In the changeover the cans and can cooler are replaced with the bulk tank; the van-type truck is replaced with a tanker truck; and the measuring and sampling of milk takes place at the farm rather than at the plant. When the changeover is complete, conventional receiving operations at the plant can be eliminated. As a result milk can be received at the plant even when the plant force is not working, and this increases the flexibility of the handling system.

A large refrigerated insulated stainless steel tank is used on the farm to hold the milk, the milk is measured and sampled while in the tank and then pumped into a tanker truck for delivery to the plant. Many reports have promised less cost, less labor, higher butterfat tests, more milk sold, lower hauling costs, better quality milk, and higher prices. This article attempts to give factual information on bulk milk handling.

MECHANICAL FEATURES OF THE FARM BULK HOLDING TANK

Bulk farm tanks consist of a tank with a mechanical agitator, a compressor, and a condenser (either air cooled or water cooled).1/ Some companies are distributing units that use air agitation. Agitation of the milk by air requires a small air compressor. The size of the compressor motor in the condensing unit varies with the size of the tank, the frequency of delivery, the type of cooling system, and whether the condenser is air-cooled or water cooled. The water cooled condensers usually require less compressor motor capacity.

1. Types of Cooling Systems. There are three major types of cooling systems being used in bulk farm tanks: The direct expansion, the ice bank, and the

1/ If the condenser is water cooled there will be need for a large supply of cheap water or a cooling tower and a water circulating pump. The water consumption of water-cooled condensers ranges from ½ gallon to 2 gallons per minute per horsepower.

instantaneous water system.

a. The direct expansion system operates during each milking and cools milk directly. The liquid refrigerant surrounds the milk in the tank and cools by absorbing the heat from the milk. In the process the refrigerant is coverted from a liquid to a gas. The compressor and condenser then compress and cool the gas so that it becomes a liquid and is ready for reuse.

Because this system does absorb milk heat directly, accurate and reliable controls are required to prevent milk from freezing. If thermostats, expansion valves, and suction valves are accurately controlled, freezing is not a problem. The system usually requires a compressor motor capacity of about 1 H. P. for each 50 gallons of milk to be cooled at each milking. 1/ This larger motor (larger than in the ice bank system) is required because the milk is cooled quickly or within a relatively short period of time. Studies show that these larger motors do not increase the total electric consumption. They cause a greater demand for electric power at a time of day when there are many other demands for power. Electric consumption for these units averages about .9 kilowatt hour for each 100 lbs. of milk cooled. (less when water cooled condensers are used.) The larger direct expansion systems also require additional expense for installation. 1/

The smaller size direct expansion tanks may come in "packaged" units; i.e., the compressor and motor, the condenser, and the tank are all in one unit--similar to a home refrigerator or freezer. The larger direct expansion coolers are usually purchased with the motor and compressor separate from the tank. (Also some of the larger sized ice bank types) When installed separately the condensing unit is called a "remote" unit. Often it is located outside the milk house for the purpose of cooling condensing coils more efficiently. Air cooled condensers are more appropriate with small condensing units. For larger units air and water cooled combination units are often used, the water element being disconnected if there is danger of freezing.

1/ Morris, March, White, and Turner, "Bulk Cooling and Storage of Milk on the Farm," Cornell Extension Bulletin 899, 1954. Pages 5, 6.

b. The ice bank is a system using ice water as the cooling medium. The refrigerant coils are located in the ice water compartment. A portion of the water is frozen into ice which permits storage of refrigeration until it is needed for cooling milk. When cooling of the milk is to begin, ice water is circulated around the portion of the tank that contains the milk. This system requires more total refrigeration because the water must be cooled in addition to the milk and more electricity is required where ice is made. The making of ice permits the use of a smaller size compressor motor to cool the water and also makes it possible for the motor to run at a time of day when the demand load may be at a minimum. However a pump is required for circulating the ice water. In this system there is no danger of the milk freezing. Water freezes at 32° F. and the milk at approximately 31.5° F.

Generally the ice bank system requires about 1/3 H. P. of compressor motor capacity for each 50 gallons of milk to be cooled at each milking. 1/

Electric consumption for the ice bank system is about 1.6 kilwatt hour per 100 pounds of milk cooled. 1/ This is approximately .7 kilwatt hours more than that required for direct expansion.

c. The instantaneous water system is a combination of the direct expansion and the ice bank system. In other words it has enough refrigeration coils to cool the water instantaneously. The system operates by pumping the ice water around and under the tank during the time of cooling to absorb the heat from the milk. The water then continues its cycle back through the refrigerant coils to be cooled before it is pumped through the tank again. There are no data available as to electrical requirements for this type unit. However, this system is similar to the direct expansion type in that the demand for electricity is at milking time and may be at the time of day when there are other demands for electrical power.

These three types of cooling systems can be applied to tanks which are sealed and held under vacuum by the milking machine, as well as the open type tank discussed in this bulletin. To date, however, vacuum tanks have not been used

1/ Morris, March, White, and Turner, "Bulk Cooling and Storage of Milk on the Farm," Cornell Extension Bulletin 899, 1954 Page 6.

extensively.

2. Finishes--Stainless Steel Exteriors or Mild Steel Exteriors? It is a debatable question whether or not the producer should purchase an all stainless steel exterior or a mild steel finish. At the present time, stainless steel exterior finishes range from 7 to 15% more in cost than the mild steel finishes. Thus a producer should consider whether or not he can use the money more advantageously in some other place. He should not assume that stainless steel will eliminate all corrosion problems. It will eliminate the necessity of painting periodically. It will not eliminate the necessity of proper care. Wrenches and other tools of different metals will cause rust spots on stainless steel if they are allowed to remain in contact with it. Also any residue object or substance left on the surface that permits oxygen starvation will pit and discolor the surface.

It is highly recommended that the tank covers be stainless steel. This is based on the fact that water will probably remain on the cover which will cause the paint to deteriorate. When the paint deteriorates or scales off, there will be rust which may cause a sanitary problem when the cover is raised or lowered because of bits of rust, rust water or debris falling into the milk. Most dairy plants have discontinued the use of mild steel exteriors for pasteurizing vats and similar equipment because of maintenance, appearance, and sanitary requirements.

One word of caution to producers if they buy stainless steel finishes Be Sure that it is stainless steel. Not all of the so called stainless steels are corrosion resistant.

WHAT TYPE OF TANK?

The make and type of tank may be partially limited by the bargaining arrangements between the manufacturers and the purchasing group. A compromise in choices may have to be made in order to get volume price reduction.

If possible both the ice bank type and direct expansion type should be considered. If line voltage or amperage is limited, the ice bank type may be preferred.

On the other hand the direct expansion type can operate more economically and can cool faster when properly powered. As to size, the first consideration is whether milk will be picked up every day or every other day. Although the tanks usually will hold 5-10% above rated capacity, some provision should be made for increased production and/or for seasonal variations in production. We have indicated this by setting up Table 1 with tank sizes to hold five milkings in the flush period. No definite recommendation can be made at this time as to the smallest effective size. There are tanks as small as 50 gallons in operation.

Article 1, Section 4-5.2 "Farm Bulk Milk Holding Tanks" of the Rules, Regulations, Definitions and Standards of the N. C. Department of Agriculture (Revised July 1, 1954) gives the requirements of the N. C. Department of Agriculture concerning farm tanks. Before any farm tanks are purchased or milk houses constructed the producer should consult these regulations and make sure that the farm tank in question complies with these regulations. In addition he should check with his local milk sanitarian to see that the tank and milk house comply with local health requirements.

MILK QUALITY

1. Low Bacteria Counts. A great deal of the material published to date shows that bacteria counts are reduced as a result of bulk tanks. This reduction is probably associated with the fact that the milk is cooled more quickly and to a lower temperature than with former methods of cooling.

Not all of the findings show that by simply converting to farm tank that the bacteria count will be reduced. A study of the patron deliveries in Vermont shows some farms delivered higher count milk after converting to bulk tanks.

2. Weed and Feed Flavors. Weed and feed flavors are now a problem with can handling of milk which will not cease with the advent of the bulk tank. However, it will change the emphasis from the processor to the producer with respect to the grading of milk of individual cows. In the past, producers have not been too concerned about holding night milk and morning milk separate but have relied upon

the sharp taste and smell of the plant receiving men to tell them whether or not they were doing a good job of controlling flavors. With the bulk tank, the producer will have to assume this responsibility because night and morning milk will be mixed on the farm, and there will be the possibility of getting a tank of milk rejected instead of a 10-gallon can.

3. Rancid Milk. If the milk is cooled immediately and not allowed to increase in temperature above 45°, rancidity is not a problem. Improper operation which allows temperatures to rise abnormally may cause trouble. This can result from failure to start the cooling system prior to or at the time warm milk is put into the tank. At the present time most of the induced rancidity is associated with pipeline milkers rather than the bulk tanks. Among the more troublesome conditions causing induced rancidity in pipeline milkers are: The admission of air to the milk line; a low milk flow rate; the elevation of warm milk under vacuum with air bubbling through it; the inclusion of a filter and numerous fittings in the vacuum-section of the milk line and the continuous operation of a starved centifugal pump. 1/

COSTS INVOLVED IN BULK HANDLING

1. Difference in Initial Investment. Approximate price ranges f.o.b. factory are given in Table 1 for bulk tanks with condensing units sized for every-other-day pickup. Prices are given separately for direct expansion and ice bank types. Stainless steel exteriors usually add 7 to 15% to the quoted price. Also, crating costs, freight costs from the factory, and installation costs should be added to basic prices. For the packaged unit, installation will consist of leveling the tank, and possibly milk house alteration, wiring alteration and driveway alteration. If a unit is chosen with remote condenser installation, installation costs must also include the connection of wires and tubing and a control panel. For a water cooled condenser, water connections and perhaps a cooling tower and pump are needed. The extra installation costs for large units may run to $300 or more. No estimate can be made of the cost of alterations in the milk house, wiring and roads since these

1/ Kelley, L. A., and Dunkley, W. L., "Hydralytic Rancidity Induced by Pipeline Milkers," Journal of Milk and Food Technology.

costs are specific for each farm.

It is suggested that if every-other-day pickup is planned, a tank which will hold 5 milkings in the flush season be chosen. Suppose that milk is produced evenly the year around. If we make these assumptions and say also that the tank will last 10 years and the rate of interest on the investment will be 5 per cent, then Column X Table 1 gives us the approximate capital cost per cwt. 1/ These figures do not include income from the sale of can coolers and cans; nor do they include costs of altering buildings, wiring, and roads.

There should be subtracted from the initial investment an amount required to replace the cans and can cooler when they wear out. Assuming the can cooler also lasts 10 years, the investment cost for the can cooler is about 3¢ per cwt. for the 10 can per day producer and the can cost about 1¢ per cwt. Somewhere in the neighborhood of 4¢ per cwt. can thus be deducted from the investment cost of bulk coolers if we are considering the added investment costs of shifting from can to bulk handling.

Manufacturers of bulk farm tanks prefer that a local jobber be made responsible for installation and maintenance of the bulk tank and for servicing the condensing unit. Groups of farmers or dealers who arrange to buy in quantities may receive discounts of 10-20% or more if they perform these functions. A local refrigerating service may be enlisted to service the condensing unit and for this reason it may be best to buy the condensing unit locally. On the other hand, manufacturers are in a position to pass on substantial discounts on condensing units if purchased with the tank. Both alternatives should be investigated.

Estimations of tank life vary from 7 to 20 years, depending somewhat on the type of steel and finish of the exterior tank. The life of the condensing unit is shorter, especially if the operating speed is high and if the tank is underpowered. Because of the uncertainty, lifetimes of 10 years for the tank and 7 years for the condensing unit may be appropriate as depreciation rates.

1/ Extra taxes and insurance, and the reduction in borrowing power for other uses, can easily increase interest cost to 10% on the investment.

Concerning financing, rates may vary, but 1/3 down, and 3 years to pay the balance out of the milk check should be available through local banks. Better plans may be available when the milk dealer or producer's association sponsors the financing.

2. Differences in Power Consumption. Consumption of electric current may be decreased with bulk tank cooling as compared with can cooling. Morris indicates an average figure of 1.25 KWH per cwt. for can coolers. 1/ Consumption fugures will vary greatly depending on the installation. In spite of the efficiency of the bulk coolers in cooling milk, a producer's electric bill may increase when he shifts to bulk if he previously did not cool morning milk.

3. Differences in Labor Requirements on the Farm. Bulk tanks on the farm save the effort of lifting heavy cans of milk (over 100 pounds per can). The value of this reduction in effort is difficult to assess. If it has been customary to wash the cans, it will be found easier and less time consuming to wash the bulk tank every other day than to wash cans every day. Farmers who have installed bulk tanks often report time saved, although this may be due in part to the installation of pipeline milkers at the same time. For example, in the Chicago milkshed in January 1954, 66 of 121 farmers who replied to a questionnaire reported time saved averaging 38.8 minutes per day. 2/ On the other hand some producers indicate no saving in time with bulk tanks compared to can systems.

4. Hauling Differences. Many markets where bulk tanks are installed report hauling savings. These accrue from several sources, and are largely due to a changeover from every day pickup with cans to every-other-day pickup with a tanker.

a. Fewer trucks are needed. (This may mean less truck cost, even though one tractor with 1800 gal. stainless steel tank may cost $9,000 in comparison to $8,000 for two tractors with van bodies with the same capacity of milk in cans.)

1/ Morris, W. H. M., Unpublished Manuscript

2/ Pure Milk News, January, 1954

b. Better route organization. A tanker visiting a group of farms every other day can pick up the same amount of milk in fewer miles of travel and less time.

c. More flexibility. With the can system trucks had to arrive at the plant at specified times to keep the receiving crew busy. With bulk hauling, milk can be handled by the hauler alone. This enables a hauler to make two trips a day in some cases.

d. Fewer truck drivers, even though each one may receive higher pay. The milk hauler must be a skilled sampler and be able to provide technical assistance to the producer.

Hauling reductions of 10¢-20¢ per cwt. have been reported, but these reductions may be partially due to the fact that bulk tanks are installed first on larger farms. Other variables which may have influenced hauling rate reduction are the shift to every-other-day pickup, a very important cause, and monetary incentive to induce purchase of bulk tanks.

5. Butterfat Tests. Reports are conflicting as to the effect of bulk tanks on butterfat tests. Some reports say there is no increase, others place the saving at one point or 6¢ per cwt. Losses in cans are due to the sticking of fat to the shoulder of the can as the fat rises to the top. However, reports from the Delaware and Vermont Experiment Stations indicate the saving from fat loss may be over-emphasized.

6. Milk Loss. In the bulk tank system the milk is measured before loss occurs in transit. The dealer pays for more milk. There is also a reduction in absolute loss; since less sticks to the side of containers in the bulk tank system. The saving may amount to as much as 1% of the milk volume, depending on the procedures formerly used in transporting and receiving. One important source of milk loss in the plant has been spillage and can draining time, which varies considerably.

7. Differences in Receiving Costs. With the elimination of can washing, weighing and sampling at the plant savings in receiving cost may range from 0 to 25¢ per cwt. compared to the can system after a 100% switchover. If both methods of receiving are used, receiving costs per cwt. are higher.

8. Quality Costs. Plant costs for fieldmen often increase when the change to bulk tanks is made. This cost, however, is very variable, depending on the policy of the plant. To keep bacteria count low and feed flavors out of milk, good field work must be done.

WHO BEARS THE COST?

The costs of conversion to bulk handling can be estimated fairly closely, but the operating costs per cwt. of milk will depend not only on the investment, but on labor and on other costs, and on the procedure which is followed.

For the farmer, approximate investment costs per cwt. for various herd sizes are given in Table I (Column X). Usually other costs such as milk house alteration will also be included, but for the items included, assuming a 10 year life of the tank, the estimates are 15¢ per cwt. for a 15-cow producer; 11¢ per cwt. for a 35-cow producer; and 7¢ per cwt. for a 75-cow producer. To put bulk tanks on the 5,200 Grade A dairy farms in North Carolina, an outlay of approximately $8 million will be required. 1/

For the hauler, investment in tanks mounted on trucks is required, complete with motor and pump, hose, and sample compartment, and possibly a small compressor for cooling the hose and samples. Such tanks holding 1,800 gallons sell for about $6,000 and can be mounted on trucks with one rear axle similar to two ton can hauling trucks. Old van bodies in good condition can be salvaged at $300-$500. Total outlay for converting all assembly trucks in North Carolina might amount to $1,000,000. 2/ Costs per cwt. for hauling will depend on the hauling organization. Van bodies usually carry 120 cans at maximum (1,200 gallons) and in many cases go over the route a second time each day to return cans. With bulk handling most farms will need to be visited only every alternate day, and carry a maximum of 1,800 gallons. Two trips can often be made per day. Hauling costs per cwt. under these ideal conditions will be considerably less than under the can system.

1/ This figure is based on average daily deliveries per producer of 40 gallons requiring tank sizes averaging between 100 and 150 gallons.

2/ This figure is based on every-other-day pickup with each truck assembling from 40 farms.

For the dealer, the added investment for bulk handling will depend on whether he makes the investment in hauling facilities. In many cases, even where contract haulers now assemble milk in cans, dealers may assume the hauling function. In the plant, if the dealer can dispense with the can washer and can conveyers, he can gain the salvage value of these items plus the space they previously occupied. Receiving costs per cwt. can be expected to fall (after conversion to bulk is complete) since cooling costs, steam requirements and receiving labor will be lower. Quite possibly the dealer will need to increase field work at least temporarily.

WHO BENEFITS?

The potential savings from bulk milk handling are summarized in the following table. Probably savings from some sources would be experienced in each market, but it is not likely that maximum savings from all sources would be experienced in any one situation.

Source	Potential Savings (cents per cwt.)	
	Minimum	Maximum
Butterfat Test Increases	0	6
Milk Loss Reduction	0	6
Quality Premium	0	10
Hauling Savings	0	20
Dealers Savings	0	25

The first two items (reduction in butterfat loss and milk loss) will benefit producers to the extent they are realized. (0-12¢ per cwt.) Although improved quality adds to acceptance and keeping quality of milk, many dealers may see no immediate cash value for quality, if milk quality is already very high. In other cases a premium for improved quality resulting from bulk tanks may be paid. The savings effected in the hauling may range from 0 to 20¢ per cwt. depending on the hauling structure before and after conversion, and these savings will accrue to the dealer if he assumes the hauling function and investment costs unless the price of hauling is reduced. Dealers will also have potential savings of 0-25¢ per cwt. as a result of eliminating can receiving.

In this discussion on savings the assumption has been made that the bulk tank system has fully replaced the can system of handling milk. Even where the bulk

tank system is operating, the potential savings are difficult to estimate since they depend so much on the efficiency of the hauling and receiving operations before and after the changeover. Who realizes the benefits from the savings depends on the changes in hauling rates and milk prices, and the proportion of costs borne by each.

THE TRANSITION PERIOD

Surveys have been made of the amounts of money allocated to producers as premiums to encourage bulk tank installations. Since practically all the data come from markets where changeover is not complete, the savings which result from bulk milk handling may not have occurred in each case. A survey by the U.S.D.A. in June 1953 indicated that farmers in the middle Atlantic states were obtaining premiums or reduced hauling rates totaling 3.5¢ to 18¢ per cwt. Across the U.S. producers averaged 12¢ per cwt. more money through reduced hauling rates or other payments. 1/

When a market is in the transition period, a farmer may well ask, "just when should I buy a tank?" Installation of bulk tanks on farms offers little if any economy, unless tanker trucks are used for hauling. Very large farms with pipeline milkers may find the bulk holding tanks as cheap as the can system even if milk is canned off.

When the decision has been made to introduce the system either by a dealer, a producer's association, or a group of producers; then a choice must be made by the producer as to whether or not to install a bulk tank.

The choice may at first be between shipping Grade A in cans and installing a bulk tank. Later on the choice may be between installing a bulk tank or dropping out of the Grade A market.

A dairy farmer who needs additional cans and can coolers may choose to purchase a bulk tank even though he must can off milk for a considerable period of time. This includes a farmer just entering the dairy business. On the other hand, a dairy farmer adequately equipped at the present time has no economic motive for changing his system unless the market situation demends a decision or unless he can see benefits to justify the conversion.

1/ Stocker, Noel, "Progress in Farm to Plant Bulk Milk Handling," FCS Cir. 8, 1954.

TABLE 1 APPROXIMATE COST OF BULK TANKS

Tank Size	Packaged Unit (List Prices F.O.B. Factory) 1/		Tank Only 1/	Condensing Unit Only 2/					
	Ice Bank	Direct Expansion	(F.O.B. Factory)	Local List Prices h.p.	Price	Est. Freight	Est. Installation	No. of Cows (6000 lbs. Yearly Prod.)	Pounds of Milk Daily	Investment 5/ Cost Per Cwt.
(Col. I)	(Col. II)	(Col. III)	(Col. IV)	(Col. V)		(Col. VI)	(Col. VII)	(Col. VIII)	(Col. IX)	(Col. X)
80 gal.	$1150	$1200				$50	$50	15 cows	250 lbs.	16¢ per cwt.
100 gal.	1200	1600	1200	½	$200					
150 gal.	1400	1800	1400	3/4	300					
200 gal.	1800	2000	1600	1	400	100	100	35 cows	600 lbs.	11¢ per cwt.
250 gal.	1950	2200								
300 gal.	2300	2400	1900	2	700 3/					
400 gal.	2600	2700	2100							
500 gal.	3000		2400	3	900 3/	150	300	75 cows	1300 lbs.	7¢ per cwt.
750 gal.	3800		3200	5	1300 4/					

1/ These quotations are for milk steel exterior jackets with painted, bonderized, porcelain or plastic finish. Stainless steel exterior can be obtained on many of these tanks for about **7-15% higher price.** One company sells only tanks with stainless steel exterior. Prices are approximate list prices as of June 1, 1955, and are not necessarily prices paid by North Carolina buyers. Prices of individual brands may vary from these quotations as much as 10%. Packaged units include condensing units sized for every-other-day pickup. Prices include calibration expenses.

2/ Sizes of condensing units recommended by various companies for each size of tank will vary considerably. The sizes shown here are approximate for direct expansion systems with every-other-day pickup. If milk is picked up every day larger motors are required. Ice bank systems use smaller motors.

3/ Air and water cooled.

4/ Water Cooled.

5/ Calculated on basis of 10 year life, 5% interest on investment (packaged ice bank unit with mild steel exterior), allocated over pounds of milk shown in Column IX, no seasonal variation, and with tank capacity 5 milkings. This figure allows for no milkhouse, road or wiring alteration costs, and no credits for present can equipment or salvage value of bulk tank.

Exhibit J

Proposed Layout for one of the Ice Cream Manufacturing Plants in North Carolina (Each small square represents one square foot).

COUNTIES WORKED IN DURING 1955

Alamance	~~Currituck~~	Lee	Richmond
Alexander	~~Dare~~	Lenoir	Robeson
Alleghany	Davidson	Lincoln	Rockingham
Anson	Davie	McDowell	Rowan
Ashe	Duplin	Macon	Rutherford
Avery	Durham	Madison	Sampson
Beaufort	Edgecombe	Martin	Scotland
Bertie	Forsyth	Mecklenburg	Stanly
Bladen	Franklin	Mitchell	Stokes
Brunswick	Gaston	Montgomery	Surry
Buncombe	~~Gates~~	Moore	~~Swain~~
Burke	~~Graham~~	Nash	Transylvania
Cabarrus	Granville	New Hanover	~~Tyrrell~~
Caldwell	Greene	Northampton	Union
~~Camden~~	Guilford	Onslow	Vance
Carteret	Halifax	Orange	Wake
Caswell	Harnett	Palmico	Warren
Catawba	Haywood	Pasquotank	Washington
Chatham	Henderson	Pender	Watauga
Cherokee	~~Hertford~~	Perquimans	Wayne
Chowan	Hoke	Person	Wilkes
Clay	Hyde	Pitt	Wilson
Cleveland	Iredell	Polk	Yadkin
Columbus	Jackson	Randolph	Yancey
Craven	Johnston		
Cumberland	Jones		

COMBINED STATISTICAL REPORT OF ENTIRE STAFF

Days in Field	~~1271~~ 1288.7
Days in Office	~~1110~~ 1093.7
Days Sick Leave	~~1~~ 23.5
Days Annual Leave	~~135.5~~ 99
Farm and Other Visits	~~2836~~ 3115
Meetings Attended	~~1559~~ 1976
Attendance at Meetings	~~81,064~~ 85,227
Correspondence	
First Class Letters Written	~~11,638~~ 12,070
Form Letters Sent Out	~~30,925~~ 40,827
Miscellaneous Matter Mailed Out	~~25,128~~ 30,130
Office Conferences	~~2518~~ 2649
Articles Written, Radio and TV	~~458~~ 593
Visits to County Agents	~~1536~~ 1917