Animal and Dairy Science Department
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GEORGIA DAIRYFAX

http://www.ces.uga.edu/Agriculture/asdsvm/Dairyscience/dairypage.HTML May/June 2004

Dear Dairymen:

The enclosed information was prepared by the University of Georgia Animal and Dairy Science faculty responsible for Extension Programs in Dairy Science. We trust this information will be helpful to dairy farmers and dairy related businesses for continued improvement of the Georgia Dairy Industry.

The following information is included:

Sincerely,

William M. Graves
Extension Dairy Scientist

County Extension Director or County Agent

/jlo

DAIRYFAX NEWSLETTER

A New Editor

Extension Dairy Science Staff

Since June is Dairy Month, it seemed like a good time to appoint a new editor for the Georgia Dairyfax. Jim Smith retired in November and has been working on a 25% appointment to complete several projects and to continue as editor of the Georgia Dairyfax. Now is a good time for a changing of the guard. After much discussion and competition, Bill Graves has emerged as the EDITOR to replace Jim.

We wish him well in the new endeavor and know that the excellence of the Georgia Dairyfax will continue. Our thanks to Jim for all his hard work.

Field Day Planned at Williams Dairy

William M. Graves
Extension Dairy Scientist

Everett and Carol Williams and family have graciously agreed to host a field day on July 22, 2004 in Morgan County. The day is being coordinated by Georgia Milk producers and the University of Georgia Agricultural Extension Service. The new freestall barn will be discussed, along with manure management, free stall surfaces, forage production and AI without heat detection. Speakers include Dr. John Worley, Dr. John Andre, Dr. John Bernard, Dr. Bill Graves and John Cook.

For the young people interested in commercial dairy heifers, Jillian Fain, Katie Williams, and Bobby Smith are planning a workshop on fitting, judging and showing dairy heifers before lunch. As many know, the Williams family provides heifers to young people in several counties each year. The field day begins with registration at 9:00 am and lunch will be provided. More activities are being planned as well. Hope to see you July 22nd.

The dairy is located on Hwy. 53 south of I-20 and Madison.

For more information contact:

Farrah Newberry - 706-310-0020 or 800-337-0555

Bobby Smith - 706-342-2214
Bill Graves - 706-542-9106

AI vs. Natural Service Breeding in the South

J. W. Smith, L. O. Ely, W. D. Gilson, and W. M. Graves
Extension Dairy Scientists

Over the last 50 years or so, much has been written about the advantages of breeding dairy cows and heifers by artificial insemination (AI) versus natural service (NS). However, heat detection continues to be an important factor affecting reproductive performance on dairy farms using AI. As herd size increases, problems with heat detection become even more important. So, despite the inherent dangers associated with herd bulls, many producers continue to breed all or some of their cows by NS.

We recently completed a study to determine the effects of various combinations of AI and NS breeding on production and reproduction in DHI herds. DHI herd summary records for 1999 through 2002 were obtained from DRMS, Raleigh. Only Holstein herds with at least 25 cows and a rolling herd average of 12000 lbs. were included in the study. Herds were assigned to one of four breeding systems (BS) based on the percentage of NS usage as follows: 1) 0%, 2) 1-20%, 3) 21-89% and 4) 90-100%.

The average percent AI usage by breeding system is shown in Table 1. Herds breeding 100% AI were in the BS1 category. Herds breeding mostly by AI but using NS for problem breeders in a 'clean-up' role were in the BS2 category. Herds using both AI and NS were represented by BS3 and herds breeding almost entirely by NS were in BS4.

The effects of breeding system on various measures of reproductive and productive efficiency in the South region are shown in Table 2.

Actual Calving Interval

Calving interval is a routine measure of reproductive performance. Since the projected calving interval tends to over-estimate the calving interval for herds breeding by NS, actual calving interval was used in this study. Herds breeding primarily by NS (BS4) had significantly shorter actual calving intervals compared to herds breeding by the other methods (BS1, BS2, BS3).

Dry Period

Extremely long or short dry periods will adversely affect profitability. Short dry periods don't allow enough time for regeneration of udder tissue. Long dry periods result in higher feed costs, less lifetime production and possibly excessive body condition that may cause health and reproductive problems in the next lactation. AI herds (BS1) had fewer days dry compared to the other groups. The two groups breeding primarily by AI (BS1 and BS2) had a greater percentage of dry periods between 40 and 70 days. The percentage of extreme dry periods (less than 40 or greater than 70 days) was also lower for the same two groups. Lack of accurate breeding dates and calving information probably contributes to the longer dry periods and greater variability observed with increased NS sire usage.

Percent Cows in Milk

The percent cows in milk is a measure of overall herd reproductive efficiency and is affected by percent cows leaving the herd, calving interval, and days dry. In our study, the percent cows in milk declined as the percent NS sire usage increased.

Milk Production

Herd milk yield as measured by rolling herd average was significantly higher for AI breeding herds and declined as the percent NS sire usage increased.

Summary

Many producers feel that NS sires will improve heat detection and overall reproductive efficiency. Indeed, actual calving intervals were shorter for herds using primarily NS sires in this study. However, this advantage was offset by more days dry for NS herds probably because of the difficulty in accurately predicting calving dates. Overall reproductive efficiency as measured by percent cows in milk favors AI herds and declines as NS sire usage increases.

Herd milk yield was significantly higher for AI herds and also declined with increased use of NS sires. Even herds that limit NS sires to a 'clean-up' were at a disadvantage compared to AI herds in both reproductive and productive efficiency.

Table 1. Percentage of artificial insemination (AI) usage by breeding system (BS) by year.

BS[a]	1999	2000	2001	2002	Average (all years)
1	100.0	100.0	100.0	100.0	100.0
2	93.0	93.0	93.0	93.0	93.0
3	54.2	53.7	54.1	54.6	54.2
4	1.0	1.0	1.0	1.0	1.0

[a]Breeding systems are according to percentage of natural service usage: 1 = 0%, 2 = 1 to 20%, 3 = 21 to 89%, and 4 = 90 to 100%.

Table 2. Effects of breeding system[1] on reproduction and production efficiency in the South region.

	Breeding System			
	1	2	3	4
Actual calving interval, mo	14.34[a]	14.49[a]	14.54[a]	13.66[b]
Days dry	66.8[c]	69.33[a]	70.58[ab]	71.75[b]
Dry 40 to 70 d, %	67.92[a]	64.67[a]	58.06[b]	45.94[c]
Dry > 70 d, %	24.47[a]	27.90[b]	31.84[c]	38.97[d]
Dry < 40 d, %	7.60[a]	7.42[a]	10.09[b]	15.08[c]
Percent in milk	87.49[a]	86.76[b]	86.24[c]	84.40[d]
Herd milk yield, lbs	19,555[a]	18,838[b]	18,230[c]	16,570[d]

[1]Breeding systems by percent natural service sire usage: 1 = 0%, 2 = 1-20%, 3 = 21-89%, and 4 = 90-100%.

[abcd]Least squares means within a row with the same superscripts do not differ (P < 0.05).

Managing Feed Cost

John K. Bernard
Dairy Research and Extension

Feed prices have increased considerably over the past few months due to higher protein and energy cost. From all indications, feed prices will not likely decline until the new crop is harvested and any potential decline may be modest because of reduced inventory and increased demand. Since the price of corn and soybean meal is tied to crop production in the US and South American as well as world demand, it is too early to tell what feed prices will be longer term. However, there are several things producers should do to manage feed cost.

First on the list is improving forage quality. This not only reduces feed cost but could also improve milk yield and animal health. Forage quality can be increased through selection of varieties that have above average digestibility, harvesting at the optimum stage of maturity maximize nutrient digestibility, use of proper storage and feeding management. Many producers already do a good job, but there are normally some improvements that can be made.

Nutrient losses' associated with silage can be greater than most producers realize because they are not always visible. Most of the digestible nutrient losses from silage are associated with excessive seepage, inadequate storage or inadequate silo face management. These losses represent some of the more digestible nutrients leaving material that is less digestible. Improving silage quality and digestibility allows more forage to be fed which maintains a healthier rumen and requires less grain which reduces purchased feed cost.

Dry matter losses for round bales of hay stored on the ground without any cover are often greater than 25%. When coupled with feeding losses, it is not uncommon that more dry matter losses are greater than 33%. These losses increase feeding cost considerably for producers who use a good deal of hay that is stored outside. Improving storage of round bales would reduce the amount of hay that must be purchased and/or could provide an opportunity for selling surplus hay. Although storing hay in a barn is an ideal means of reducing storage losses, there are other less expensive options available such as constructing a gravel base to provide good drainage and covering the round bales with a hay tarp.

Rations should be formulated to meet milk yield requirements. However, many surveys indicate that producers often feed excess protein and other nutrients. In some situations, rations also contain additives or special ingredients that may not be needed based on actual milk yield or science to back up the merits of the product. Producers should sample ingredients frequently and have them tested to monitor changes in nutrient content. Also, the moisture content of feeds must be monitored routinely and rations adjusted to maintain the desired amount of dry matter from each ingredient. Changes in moisture content of feeds accounts for most of the daily variation in intake and milk yield.

Recently there have been several articles on the merits of monitoring the efficiency of converting the amount of feed offered into milk. A value that has been suggested as a goad is 1.5 lb. milk for each pound of dry matter when normal forage-based rations are fed. If feed efficiency is too low, additional forage could be fed slow the rate of passage and reduce feed cost or the feeding management adjusted to reduce the amount of left over feed. There are differences among consultants in how this measure is defined as well as what is the ideal value. Some consider this number as the total amount of feed offered whereas others consider this to be based on the total amount of feed consumed. It is important to consider the total amount of feed offered as more accurately reflects total feed cost. There may be situations where the refused feed is fed to steers or cull animals and an adjustment should be considered. Built-in-roughage or one-shot rations have much lower feed efficiency values because of the faster passage rate. This

measurement provides a means of evaluate the feeding program and cost relative to milk yield.

Improving forage quality, reducing nutrient losses, adjusting rations for changes in nutrient or moisture content, and monitoring feed efficiency are management practices that have been used for years. These practices continue to be good tools for managing feed cost, especially when ingredient prices have increased, but also when feed prices are not an issue to improve net profits.

The University of Georgia Teaching Dairy

Lane O.Ely
Extension Dairy Scientist

Like all dairymen, the Teaching Dairy has enjoyed the current milk prices. It brings some unique problems as our budget must zero out on June 30 as we can not carry over any funds to the next year's budget. We are hoping to build a solid separator settling basin. We are waiting for the bids to be opened so we can plan on the budget.

The downsizing of the dairy has gone well as the last group of cows are being transferred to Tifton the last week of May. The use of all student labor work force has worked well except for the difficulty of getting enough students that want to work at the dairy. It is a competitive market for their time.

We are hoping for rain. Our wheat silage looked good in February then quit growing. This year's harvest of wheat silage was about 50% of normal plus dryer than normal. It was the worst wheat crop we have had in 20 years. Hopefully the rain will come so the sorghum silage and hay crops will be normal.

2004 Dairy Herd Management Conference

Lane O. Ely
Extension Dairy Scientist

We are in the midst of putting together the program for the 2004 Dairy Herd Management Conference. The conference will be at Macon on November 16 and 17, 2004. This year the focus of the program is on Reproduction and Heat Stress. Speakers are being lined up and we look forward to seeing you there.

Monthly Death Loss on Dairy Farms by Region

James W. Smith and Lane O. Ely
Department of Animal & Dairy Science

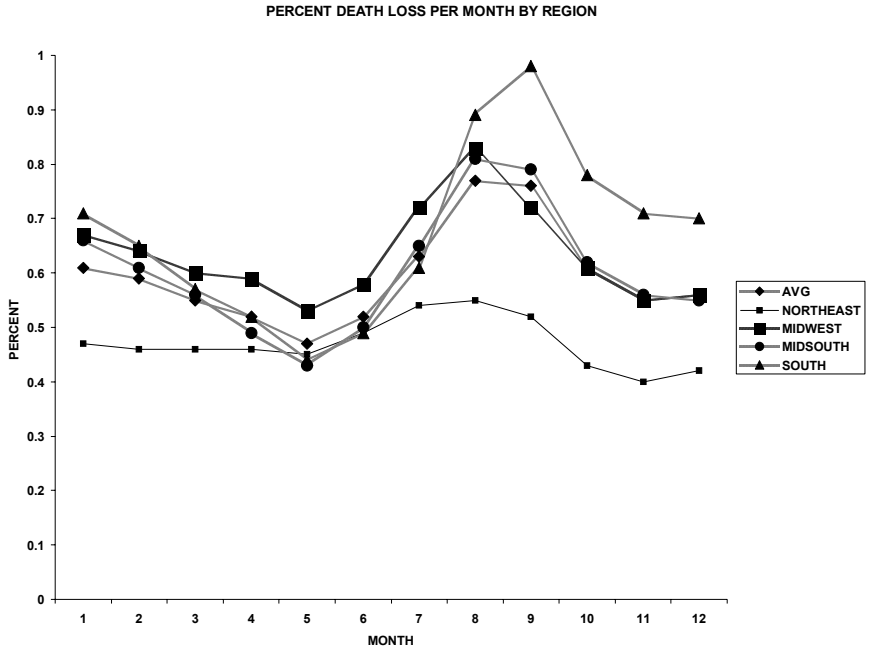
Dairy cow death losses are a significant economic loss for U.S. dairy farmers. Several factors affect death losses including region of country, herd size and level of milk production. Annual death losses have been studied. Annual death losses were reported in the South compared to the Midsouth and North. Herds of less than 100 cows had lower death losses than in herds of 100 to 199 and over 200 cows. Death losses tend to decline as herd milk production increases.

As a step to examine death losses in more detail, we examined the monthly death loss percent (MDL). MDL was calculated as ((Number of cows reported died per month) / (Total number of cows in the herd per month)) x 100.

DHI herd summary records for the years 1999 through 2002 were analyzed. Only Holstein herds with a last test date between November 1 and December 31 were included.

The MDL were significantly different for year, region, herd size and milk production. The MDL by region by month is shown in Figure 1. The lowest month for MDL for all regions was May. All regions start to increase in June with the South having a steeper rise and reaching the highest peak. The highest values for each region is August or September with the MDL declining thereafter. The South region stays at a high level for a longer period of time. The Northeast has a similar pattern but the values are at a much lower value. MDL was < .70% during all months in the Northeast. MDL was > .70% during August and September in the Midsouth; > .70% during July, August, and September in the Mideast; and > .70% during August, September, October, November, December and January in the South.

Environmental interaction may be a significant contributor to this difference.



Should You be Raising Your Own Heifers?

John K. Bernard
Dairy Research and Extension

Replacement dairy heifers represent a considerable investment in capital and labor. As many dairy producers evaluate their business plan, on area that should be evaluated is the replacement heifer program. Specifically, should you as the dairyman continue to raise you own heifers or contract with someone else to raise them for you? The answer to this question is not simple nor is it the same for all producers. Below are some aspects that producers should be considered even if they think their current replacement heifer program is fine.

First, how good are you at raising replacement heifers? To answer this question producers should evaluate the mortality rate, growth rate, age eligible for breeding, calving age, post-calving weight total cost, and first lactation milk yield for their operation. There are several standard values that can be used as a benchmark or goal. Typically mortality rates should be less than 5%, heifers should weight approximately 750 lb. by 12 to 14 months of age so they can be bred to calve at 22 to 24 months of age with a post-calving weight of 1250 lb. (Holstein). Heifers that are well grown and have above average genetics should have a first lactation ME above the herd average. If an analysis of the replacement heifer program indicates problems, it would wise to make improvement in the management and/or facilities or consider contracting with someone to grow the heifers for you.

Second, are the resources used for raising replacement heifers making the best return on investment? In many cases, using these resources to milk more cows would yield a greater return on investment. If the analysis of the current replacement heifer program indicates that additional monies are needed to improve facilities to reduce mortality or improve growth, the producer should also consider the return that would be realized if these resources were used for purchasing additional cows or improving the milking herd facilities which would improve labor efficiency and milk yield. If the analysis of the current program also indicates that contracting would reduce the capital investment in replacements because they calve at 24 months of age rather than 28, how could this capital be used long term to increase net profit.

Sometimes producers are reluctant to have someone else raise their heifers because of biosecurity issues or lack of someone local to do the job. These are valid concerns. The Professional Dairy Heifer Growers Association has adopted a voluntary best management practices program for their members to follow (www.PDHGA.org). Members of PDHGA can have their operations evaluated by qualified inspectors. This provides the dairy producers with some assurance that the grower is using practices that minimize potential health issues and provide a good quality heifers. It is always good to ask for references and look at the heifers returning to a farm before making a final decision on whom to contract with.

Another concern expressed by producers is that this cost too much and they can do it cheap. Unfortunately, many producers have not calculated their total cost of raising replacement heifers or undervalue their resources. Certainly heifers can be grown cheaper than what most heifer growers charge, but the buyer should be cautious of this as they typically get what they pay for in smaller, older heifers that may not have had all of their vaccinations or be bred on a timely basis.

As dairy producers look to improve their bottom line, they should evaluate their heifer programs. This exercise should identify any potential problem areas that could be addressed to improve this aspect of their business. It is also good to consider the economics of contracting with someone else to raise replacement dairy heifers.

TOP 20 DHIA HERDS BY TEST DAY FAT PRODUCTION

					Test Day Average				Yearly Average				
							Fat			Fat		Protein	
Herd	County	Br.	Mo.	Cows	% Days in Milk	Milk	%	Lbs.	Milk	%	Lbs.	%	Lbs.
Berry College Dairy	Floyd	J	2	26	96	64.2	5.4	3.47	21202	5.1	1079	3.5	745
Williams Dairy	Morgan	H	3	501	94	82.0	3.8	3.14	25487	3.7	943	2.9	727
Gin Branch Farm	Laurens	H	3	45	96	81.7	3.6	2.97	20771	3.8	788	3.0	630
Earnest R. Turk	Putnam	H	3	348	99	69.7	4.1	2.88	20250	3.9	782	3.0	608
Ray Ward Dairy	Putnam	H	3	132	94	65.1	4.3	2.77	21416	3.9	835	2.9	628
Martin Dairy L.L.P.	Hart	H	3	297	92	70.8	3.8	2.71	21175	3.6	765	3.0	637
Krulic Dairy Farm, Inc.	Screven	H	3	105	94	65.0	4.0	2.63	21794				
Anthonys Dairy	Sumter	H	3	814	88	66.7	3.9	2.60	21127	3.8	807	2.9	612
Lee Whitaker	McDuffie	H	3	357	96	66.6	3.9	2.59	20801	3.6	752	3.1	644
Aurora Dairy Georgia - LLC	Mitchell	H	3	3307	95	63.8	4.1	2.59	20822	3.8	785	3.0	623
Scott Glover	White	H	3	103	88	65.0	3.9	2.56	21158	3.8	813	3.0	636
Vista Farm	Jefferson	H	3	85	100	72.9	3.5	2.52	22116	3.5	769	3.1	676
Stovall Dairy	Madison	H	3	168	93	62.0	4.1	2.52	19002	3.5	667	3.0	564
Kent Walker	Greene	H	3	110	93	63.8	3.9	2.50	21095	3.3	700	2.9	604
Univ of GA Dairy Farm	Clarke	H	3	94	97	66.0	3.8	2.48	20871	3.6	756	3.0	626
Dave Clark	Morgan	H	3	885	93	82.2	3.0	2.43	24769	3.2	796	2.9	724
Rodgers' Hillcrest Farms Inc.	McDuffie	H	3	369	96	67.1	3.6	2.43	21360	3.8	811	3.0	648
Eugene King	Macon	H	3	118	97	68.6	3.5	2.42	18538	3.7	686	3.2	598
Irvin R. Yoder	Macon	H	2	148	92	68.6	3.5	2.41	23672	3.6	846	3.1	722
Cecil Dueck	Jefferson	H	3	53	94	71.5	3.4	2.40	23874	3.4	816	2.9	703

[1]Minimum herd size of 10 cows. Yearly average calculated after 365 days on test. (Mo.) column indicates month of test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X).

Information in this table is complied from Dairy Records Management Systems Reports (Raleigh, NC).

TOP 20 DHIA HERDS BY TEST DAY FAT PRODUCTION

					Test Day Average				Yearly Average				
							Fat			Fat		Protein	
Herd	County	Br.	Mo.	Cows	% Days in Milk	Milk	%	Lbs.	Milk	%	Lbs.	%	Lbs.
Williams Dairy	Morgan	H	4	502	96	78.6	3.8	2.95	25457	3.7	950	2.9	729
Berry College Dairy	Floyd	J	3	24	100	64.3	4.5	2.91	20985	5.1	1066	3.5	744
Earnest R. Turk	Putnam	H	4	341	98	68.0	4.1	2.78	20405	3.9	798	3.0	615
Irvin R. Yoder	Macon	H	3	145	95	72.1	3.7	2.67	23530	3.6	844	3.0	717
Sparkman Dairy	Colquitt	J	4	484	96	50.6	5.2	2.62	14056	4.8	676	3.5	492
Vista Farm	Jefferson	H	4	85	99	76.1	3.4	2.61	22200	3.5	773	3.1	678
Scott Glover	White	H	4	98	88	67.0	3.8	2.57	21173	3.9	818	3.0	636
Aurora Dairy Georgia - LLC	Mitchell	H	4	3412	96	66.1	3.9	2.55	20823	3.8	790	3.0	623
Irvin R. Yoder	Macon	H	4	144	97	71.8	3.5	2.54	23485	3.6	848	3.0	715
Krulic Dairy Farm, Inc.	Screven	H	4	111	92	65.6	3.9	2.54	21896				
Eugene King	Macon	H	4	122	98	71.1	3.6	2.53	18740	3.7	694	3.2	600
Rodgers Hillcrest Farms Inc.	McDuffie	H	3	360	98	65.5	3.8	2.51	21300	3.8	802	3.0	645
Cecil Dueck	Jefferson	H	4	51	96	68.6	3.6	2.50	23653	3.4	809	2.9	694
Agri-Fresh Dairy	Laurens	H	4	183	98	77.7	3.1	2.43	24601	3.3	806	2.9	713
Marvin Yoder	Macon	H	3	138	93	67.1	3.6	2.43	22158	3.5	781	3.0	660
Anthony's Dairy	Sumter	H	4	808	88	62.0	3.9	2.43	21067	3.8	811	2.9	614
Dave Clark	Morgan	H	4	882	94	76.2	3.2	2.41	24817	3.2	799	2.9	725
Rufus Yoder Jr.	Macon	H	4	124	95	69.0	3.5	2.41	20031	3.6	724	3.1	629
Russell Johnston	Morgan	H	3	110	88	65.6	3.7	2.40	18857	3.8	709	3.1	577
J.B. Gay & Son	Jenkins	H	4	275	97	64.8	3.7	2.40	20155				

[1]Minimum herd size of 10 cows. Yearly average calculated after 365 days on test. (Mo.) column indicates month of test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X).

Information in this table is complied from Dairy Records Management Systems Reports (Raleigh, NC).

TOP 20 DHIA HERDS BY TEST DAY MILK PRODUCTION

					Test Day Average				Yearly Average				
							Fat			Fat		Protein	
Herd	County	Br.	Mo.	Cows	% Days in Milk	Milk	%	Lbs.	Milk	%	Lbs.	%	Lbs.
Dave Clark	Morgan	H	3	885	93	82.2	3.0	2.43	24769	3.2	796	2.9	724
Williams Dairy	Morgan	H	3	501	94	82.0	3.8	3.14	25487	3.7	943	2.9	727
Gin Branch Farm	Laurens	H	3	45	96	81.7	3.6	2.97	20771	3.8	788	3.0	630
Ronald E. Robinson	Spalding	H	3	118	94	76.1	2.5	1.87	18421				
Agri-Fresh Dairy	Laurens	H	3	155	94	74.9	3.1	2.29					
Vista Farm	Jefferson	H	3	85	100	72.9	3.5	2.52	22116	3.5	769	3.1	676
Cecil Dueck	Jefferson	H	3	53	94	71.5	3.4	2.40	23874	3.4	816	2.9	703
Martin Dairy LLP	Hart	H	3	297	92	70.8	3.8	2.71	21175	3.6	765	3.0	637
Twin Oaks Farm	Jefferson	H	3	100	97	70.1	3.1	2.18	18461	3.7	689	3.2	585
Earnest R. Turk	Putnam	H	3	348	99	69.7	4.1	2.88	20250	3.9	782	3.0	608
Mark E. Yoder	Macon	H	3	104	92	69.5	3.2	2.22	22053	3.4	749	3.1	675
Wright, Whitty & Davis Dairy	Appling	H	3	1139	88	69.3			22269				
Brenneman Farms	Macon	H	3	105	98	68.9	2.7	1.86	18147	3.0	541	3.1	558
Eugene King	Macon	H	3	118	97	68.6	3.5	2.42	18538	3.7	686	3.2	598
Irvin R. Yoder	Macon	H	2	148	92	68.6	3.5	2.41	23672	3.6	846	3.1	722
Rufus Yoder Jr.	Macon	H	3	131	95	68.3	3.5	2.36	19859	3.6	713	3.1	624
Marvin Yoder	Macon	H	3	137	90	67.9	3.4	2.31	22187	3.5	780	3.0	660
Williams Dairy	Taliaferro	H	3	127	94	67.5	3.3	2.21	20866	3.6	744	3.0	631
Rodgers' Hillcrest Farms Inc.	McDuffie	H	2	369	96	67.1	3.6	2.43	21360	3.8	811	3.0	648
JB Gay & Son	Jenkins	H	3	273	97	67.0			20025				
Larry Moody	Ware	H	3	1003	90	67.0			22521				

[1]Minimum herd size of 10 cows. Yearly average calculated after 365 days on test. (Mo.) column indicates month of test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X).

Information in this table is complied from Dairy Records Management Systems Reports (Raleigh, NC).

TOP 20 DHIA HERDS BY TEST DAY MILK PRODUCTION

					Test Day Average				Yearly Average				
							Fat			Fat		Protein	
Herd	County	Br.	Mo.	Cows	% Days in Milk	Milk	%	Lbs.	Milk	%	Lbs.	%	Lbs.
Williams Dairy	Morgan	H	4	502	96	78.6	3.8	2.95	25457	3.7	950	2.9	729
Maco Farm	Macon	H	4	119	100	78.1	3.0	2.31					
Agri-Fresh Dairy	Laurens	H	4	183	98	77.7	3.1	2.43	24601	3.3	806	2.9	713
Dave Clark	Morgan	H	4	882	94	76.2	3.2	2.41	24817	3.2	799	2.9	725
Vista Farm	Jefferson	H	4	85	99	76.1	3.4	2.61	22200	3.5	773	3.1	678
Irvin R. Yoder	Macon	H	3	145	95	72.1	3.7	2.67	23530	3.6	844	3.0	717
Copelan	Greene	H	3	28	86	72.1	3.0	2.18					
Irvin R. Yoder	Macon	H	4	144	97	71.8	3.5	2.54	23485	3.6	848	3.0	715
Mark E. Yoder	Macon	H	4	122	96	71.5	3.2	2.27	21977	3.4	748	3.1	673
Eugene King	Macon	H	4	122	98	71.1	3.6	2.53	18740	3.7	694	3.2	600
Gloryland Dairy	Worth	H	3	186	97	70.1	3.4	2.35	18730				
Rufus Yoder Jr.	Macon	H	4	124	95	69.0	3.5	2.41	20031	3.6	724	3.1	629
Cecil Dueck	Jefferson	H	4	51	96	68.6	3.6	2.50	23653	3.4	809	2.9	694
Martin Dairy LLP	Hart	H	4	297	96	68.3	3.4	2.30	21274	3.6	769	3.0	642
Earnest R. Turk	Putnam	H	4	341	98	68.0	4.1	2.78	20405	3.9	798	3.0	615
Kent Walker	Greene	H	3	107	92	67.4	3.3	2.25	21159	3.3	707	2.9	606
Marvin Yoder	Macon	H	3	138	93	67.1	3.6	2.43	22158	3.5	781	3.0	660
Scott Glover	White	H	4	98	88	67.0	3.8	2.57	21173	3.9	818	3.0	636
Ray Lovett	Pierce	H	4	397	94	66.6	2.8	1.87	21112	3.1	660	2.9	620
Wright, Whitty & Davis Dairy	Appling	H	4	1124	87	66.3			22466				

[1]Minimum herd size of 10 cows. Yearly average calculated after 365 days on test. (Mo.) column indicates month of test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X).

Information in this table is complied from Dairy Records Management Systems Reports (Raleigh, NC).