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GEORGIA DAIRYFAX

Dear Dairy Producers:

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

INSIDE THIS ISSUE: April May June, 2018

Sincerely,

Sha Tao

Sha Tao, Assistant Professor

UGA extension

Welcome Dr. Francis Fluharty

(Dr. Fluharty recently joined the Department of Animal and Dairy Science as the department chair. Below is his letter to the dairy producers in GA)

Please let me introduce myself, and let you know why I'm so excited to join the University of Georgia. First, and foremost, it was the University of Georgia's Strong Commitment, and connectivity, to the Land Grant System that drew me to this job! I come from a diversified farm background. I was the fourth generation raised on a small, diverse family-farm in rural Eastern Ohio. My maternal great-grandfather, and grandfather, milked Jerseys. The farm was transitioned to Polled Herefords around the time that I was born, due to my grandfather's advancing age, and my father's teaching job off-farm at a local college. I was a 4-H member for nine years. In 1976, at the age of 16, I was selected to be on the Ohio 4-H State General Livestock Judging Team. This experience gave me my first experience with the Land Grant System, as the team was coached by two members of Ohio State's Animal Science Department. They took us to several universities, and some of the most progressive beef, sheep, and swine operations in the Midwest. This timeframe coincided with my only brother's return to the family farm, and an expansion that took our farm from 150 acres to over 1,000 acres, adding no-till corn and beef backgrounding as two segments of the farming operation. This was in addition to the original cow-calf operation, as well as a laying hen segment that sold eggs to stores and restaurants locally, and a daffodil segment that provided fresh-cut flowers and bulbs to area florists and greenhouses. Growing up, I thought everyone spent their summer evenings canning and freezing fruit and vegetables for their winter meals.

Following high-school, I attended The Ohio State University and majored in Animal Science. I worked on the farm most weekends, and every summer, from 1978 through 1982. This timeframe coincided with one of the highest interest rate periods in recent history. By the summer of 1982, it became evident that I would not have the opportunity to return to the family farm. As fate would have it, I received a call from Dr. Vernon Cahill, my undergraduate advisor and a world-renowned meat scientist, informing me that there was a job as the OSU/OARDC beef feedlot manager coming open, and he suggested that I apply. I began working for Ohio State two days after graduation in December, 1982. The reason that this history is relevant is that I became aware, over time, that several pieces of advice, and information that my family received from Extension educators were scientifically, and economically, inaccurate. This experience has been the driving force of my career. Namely, to become the best beef nutrition and management expert that I could, in an effort to assure that I am able to provide accurate, timely, fiscally responsible information to the families involved in production agriculture. I learned first-hand that sustainability must have economic sustainability as the centerpiece of all management practices. As a result of my background, and education, I see myself as an example of how a person's life, and livelihood, can be vastly impacted, and enhanced through the Land Grant System, if the information received is scientifically accurate and economically feasible.

Moving to my career at The Ohio State University, my primary Extension programming has been through the creation of both cow-calf and feedlot management schools throughout Ohio. These schools require producers to pay for and attend a four-week course with 12 hours of instructional time. Over the past 9 years, over 900 beef producers have attended these management schools, and have been awarded the Ohio Professional Beef Producer designation by the Ohio Cattlemen's Association (OCA). This designation was jointly developed by Extension and OCA to recognize producers and industry personnel who devote themselves to continued education. These management schools are coordinated by County-level Extension Educators and utilize Department of Animal Sciences faculty from The Ohio State University as well as personnel from other Land Grant Institutions and the Ohio Department of Agriculture. I taught Beef Production; Research Methods; Branded Foods Marketing, and the Capstone course in Animal Sciences at various stages of my career. I have been the Principle Investigator or Co-Principle Investigator on 46 funded grants bringing in over $7.3 million to support my research and Extension outreach efforts. From 2001 through 2009, my primary research activity was focused on being the Project Director for a group of researchers investigating dietary manipulation in beef production systems to investigate the use of feed grade antibiotics and alter the fatty acid composition of beef and meat products. I led a team of researchers looking to address issues ranging from animal growth, feedlot nutrition, grass fed beef, adipocyte development, and microbial ecology of antibiotic resistant genes in digestive system organisms, to value-added beef product development, and a study on human nutrition and aging that is addressing issues related to the consumption of beef in people older than 60. All of these research programs were coordinated to provide information to beef producers, processors, consumers, human nutritionists, and retailers at both the store and farmers' market level.

I believe that Land Grant System is at a crossroads with fewer people coming from farms, and an increasing need for well-trained experts who are experts in their field of study, and able to relate to producers in production and economic terms. Furthermore, we live in an economic climate of generally decreasing, not increasing, funds. We must be flexible in response to changing demographics and land use decisions, and we must be able to deal proactively with the social and environmental issues that occur at the urban-rural interface.

Finally, I am not coming to the University of Georgia's Animal and Dairy Science Department as a stepping stone to any other administrative job! I plan on ending my career at UGA, and to faithfully serve the faculty and staff in the department, residents of Georgia, our students, and Georgia's animal industries. I look forward to getting to know you, and working with you. Please know that I don't go by 'Dr. Fluharty', I go by 'Francis'. I believe that respect is earned, and is not a title that is given. I hope to earn your respect, and your friendship, as I believe the farming community, and food production, is a relationship business. I hope that you will be proud to send your children, and grandchildren, to the University of Georgia's Animal and Dairy Science Department for a Great Education from World-Class educators!

Herd it Through the Bovine

Youth Corner

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Recent Events

State 4-H Dairy Judging Contest

This year's contest was held on Friday, April 6th with 28 Juniors (6 teams) and 19 Seniors (4 teams) present. With a barn full of quality animals for the UGA Spring Dairy Show, this contest boasted talented young people and exceptional type animals. For this year's contest we were able to put together Brown Swiss, Jersey, and Holstein heifer classes as well as Jersey and Holstein cow classes.

Results from the Junior Dairy Judging Contest:

1. Abby Joyner, Burke Co., 255
2. Tony Gray, Burke Co., 251
3. Emmeline Burnett, Coweta Co., 246
4. Charlee Causey, Carroll Co., 241*
5. Eden Haider, Carroll Co., 241*

*Ties broken by reasons score.

Top five Junior team results:

1. Burke Co., Team A, 744
2. Carroll Co., 720
3. Gordon Co., 690
4. Morgan Co., 680
5. Burke Co., Team B, 660

The first place Junior Team, from Burke Co., Team A-team members are: Abby Joyner, Tony Gray, Mary Helen Coble and Jiles Coble.

Results from the Senior State Dairy Judging Contest:

Top five Senior individuals:

1. Mady Hillebrand, Coweta Co., 357
2. Gabrielle Ralston, Gordon Co., 351
3. Jennifer Brinton, Coweta Co., 344

4. Amelia Ayers, Carroll Co., 339
5. Jazmine Ralston, Gordon Co., 335

Top five Senior team results:

1. Coweta Co., Team A, 1021
2. Gordon Co., 1004
3. Carroll Co., 954
4. Coweta Co., Team B, 853

The first place Senior Team from Coweta Co. –Team A has the opportunity to represent Georgia at the National 4-H Dairy Cattle Judging Contest held in Madison, WI this fall. Coweta County Team members are: Mady Hillebrand, Jennifer Brinton, Alexa Hillebrand and Cody Whitlock.

This contest would not be made possible without all of the exhibitors at the UGA Spring Dairy Show that was held the following day on April 7th. This year's show boasted some incredibly high quality Jersey, Holstein, and Brown Swiss animals from 16 different Southeastern farms. A huge thank you from the UGA Animal Science Department to all of these exhibitors. The Supreme Champion of the show was the 3 year old Jersey cow "Poplar Top Fire Soprano" exhibited by Phillip Hulsey of Clermont, GA.

State 4-H Dairy Quiz Bowl Competition

Friday, June 1st was the largest Dairy Quiz Bowl contest in recent years. Is there a better way to kick off June Dairy Month? With six Junior teams and six Senior teams, the double elimination contest lasted for an intense, but fun, six hours! An event like no other offered to dairy youth, dairy quiz bowl is a true test of pure dairy knowledge. Also unique, Dairy Quiz Bowl allows young people the opportunity to work as a team and individually while competing in each round. Below are some example questions from this year's final round for the Junior and Senior contests!

Junior Division

- What is the number one cause of calf death from 48 hours of life until weaning?
- What term is given to a quarter that will permanently not secrete milk?
- In dairy cattle, body condition scores range from 1 to what number?
- Slight and moderate are two levels of discrimination on the PDCA showmanship scorecard. What is the third?
- What part of the cow does laminitis affect?

Senior Division

- Methane and what other gas are commonly associated with bloat?
- What fetal hormone is responsible for the initiation of calving?

- The national All-Milk price is reported by what USDA agency abbreviated NASS?
- What is the number one way to control the fly population on a dairy farm?
- What disease in calves that affects their muscles can be caused by a shortage of Vitamin E and Selenium?

How well did you do?

Placing first in the Junior Competition was Oconee Co. – Team A. Those team members were: Alyssa Haag, Robie Lucas, Lexi Pritchard, and Camden Stephens.

In the Junior Team Competition, Monroe Co. was second and Oconee Co. – Team B was third.

Placing first in the Senior Competition was Morgan Co. Those team members were: Susan Bishop, Lawton Harris, Will Woodard, and Lucy Young. Morgan Co. will have the opportunity to represent Georgia 4-H at the North American Invitation 4-H Dairy Quiz Bowl Contest in Louisville, KY this coming fall.

In the Senior Competition, Oconee Co. placed second and Coweta Co. – Team A was third.

Image: *Back row: Winning Senior Team from Morgan County*
Front row: Winning Junior Team from Oconee County

Southeast Dairy Youth Retreat

The Southeast Dairy Youth Retreat is just a few weeks away! The 2018 Southeast Dairy Youth Retreat will be hosted in the great state of GEORGIA! As of press date, we have 110 people signed up from VA, NC, KY, GA, and FL to attend. This annual event is a tremendous opportunity for youth ages 8 to 18. During the retreat, youth participants from around the southeast will interact with dairy industry professionals during hands-on learning activities. This year's group will be based in Covington, GA and will attend in class and on farm workshops, Zoo Atlanta, tour a large, crossbred herd that milk in a rotary parlor and the owner of which was named the 2017 Georgia Farm of the year, as well as a farmstead operation whose chocolate milk won the 2018 Dairy Foods Taste of Georgia Award. Thank you to all of those that are working hard to make this even a success.

Mark your Calendars

National 4-H Dairy Conference

- September 30th – October 3rd
- Please be on the lookout for more information at the "Georgia 4-H Dairy Youth Programs" Facebook page and on the "Dairy On" UGA Extension Blog. We will select 2-3 delegates to represent Georgia at this national event. For these delegates, all registration and travel costs will be covered.

Georgia National Fair Junior Commercial Dairy Heifer Show

- Entry deadline is September 1st
- Weigh in on October 6th and Show on October 7th
- Dress a Cow Contest on October 6th at 4:00 PM – Get your outfits ready!
- NEW THIS YEAR → HEIFER AGES FOR SHOWING ARE MARCH 1ST, 2017 TO AUGUST 1ST, 2018 WITH A WEIGHT RANGE OF 100 – 1,250 POUNDS.

Georgia National Fair Junior and Open Shows

- Entry deadline is September 1st
- Showing October 12th and 13th
- NEW THIS YEAR → JUNIOR AND OPEN CLASSES WILL SHOW TOGETHER!

UGA extension

The impact of A2 gene selection on other dairy traits

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Milk is composed of 87% water and 13% solids. The solids portion includes fat, carbohydrates, lactose, minerals, and proteins. The primary group of proteins is the caseins. Of these is beta-casein, which makes up approximately 30% of total milk protein and comes in several varieties. The most common varieties are known as A1 and A2 and the variant present in the milk is determined by the cow's genetics. While A1 was discovered first, research later found that A2 is the original beta-casein variant, and that A1 arose 5,000 – 10,000 years ago as a mutation. Both are a 209 amino acid chain; however, they differ at position 67. Whereas A1 has a histidine at this position, A2 has a proline. This 1 amino acid difference in a chain of 209 amino acids makes a tremendous difference in the way that humans digest the protein, which has previously been misconstrued as lactose intolerance. From the A1 protein, a 7 amino acid peptide known as BCM-7 can be cut away with digestive enzymes, but not from the A2 protein. BCM-7's side effects are suggested to affect up to 25% of the population, and researchers are currently unaware as to why some people are more sensitive than others. What is agreed upon at this time, is that a higher percentage of the population experiences gastrointestinal discomfort after consuming A1 milk when compared to A2.

Much like dairy products free of lactose, the discovery of a more digestible dairy product merely based on changes in composition led to a novel milk market, and A2 milk was born. As with other cleverly marketed "new" milk products, consumers quickly became interested in the novelty of this product; a milk free of the less digestible A1 protein. The difference in this new product market is that adjustments are not made in processing as with lactose but instead are made on the herd level through genetic selection. Attempting to tap into this new market, more producers began evaluating current, herd genetics and sourcing bulls that carry only the A2 milk gene so that they may produce milk that can be marketed to a greater audience. In turn, semen companies were pushed to reevaluate their sire lineup and add another trait into the mix, the beta casein (A1 and A2) genotype. The next factor then to evaluate is how easily a producer can select for the A2 genotype.

The A1 and A2 gene is transferred, very simply, from parent to offspring. Unlike some other traits, there is not a dominant and recessive gene. Each animal has 2 copies, and can be homozygous A1A1, heterozygous A1A2, or homozygous A2A2. The offspring will receive 1 copy of the gene from each parent. Thus, when breeding homozygous A1 animals, you will have only homozygous A1 offspring. Or when breeding homozygous A2 animals, you will only have homozygous A2 offspring. When breeding a heterozygous to a heterozygous, there is a 25% chance that the offspring with be homozygous A1A1, 25% chance of homozygous A2A2, and a 50% chance of a heterozygous A1A2. In order to achieve a full A2A2 herd the fastest (least number of generations), producers should select homozygous A2 bulls. The question then becomes, is this new selection criteria impacting other important characteristics such as milk production, fat, protein, type and productive life? The following analysis will look simply at Holsteins as the A1 mutation occurred in Europe and thus a significantly higher proportion of the

Holstein population carries this mutation when compared to other breeds. This coupled with the fact that Holsteins are still the #1 breed by numbers in the US and the top breed for semen sales means that they represent the greatest opportunity for genetic change.

Table 1. Evaluation of genetic traits for 1361 bulls by milk gene

	TPI	Milk	Fat	Type	UDC	FLC	Productive Life
A1A1 (192 bulls)							
Top 25%	**2721.4**	**2072.1 lbs.**	**95.1 lbs.**	**2.7**	**2.8**	**2.0**	**7.1**
Average	2499.6	1230.6 lbs.	65.3 lbs.	*1.8*	*1.9*	*1.3*	*5.2*
Bottom 25%	2206.6	298.1 lbs.	30.9 lbs.	1.0	1.1	0.6	2.8
A1A2 (636 bulls)							
Top 25%	2705.7	1987.1 lbs.	93.8 lbs.	2.6	2.6	1.8	**7.1**
Average	2506.5	1238.7 lbs.	66.7 lbs.	1.7	1.8	1.1	5.1
Bottom 25%	2249.1	415.3 lbs.	36.5 lbs.	0.9	1.0	0.4	2.7
A2A2 (533 bulls)							
Top 25%	2702.3	2041.1 lbs.	94.1 lbs.	2.6	2.7	1.8	6.7
Average	*2513.8*	*1293.5 lbs.*	*68.6 lbs.*	1.7	*1.9*	1.1	4.9
Bottom 25%	2276.2	546.0 lbs.	40.1 lbs.	0.9	1.0	0.4	2.6
All Bulls (1361 bulls)							
Top 25%	2706.7	2021.2 lbs.	94.1 lbs.	2.6	2.7	1.8	7.0
Average	2508.4	1259 lbs.	67.2 lbs.	1.7	1.9	1.1	5.0
Bottom 25%	2253.1	447.2 lbs.	37 lbs.	0.9	1.0	0.4	2.7

Bolded numbers indicate the top 25% of bulls of all categories.
Red numbers indicate bottom 25% of the bulls of all categories.
Italicized numbers indicate the highest average of the bulls of all categories.

1361 Holstein bulls from 6 different semen companies' May sire lineups were evaluated to see the impact genetic selection for A2A2 bulls may be having on overall genetics of Holstein bulls. The sires include proven as well as genomic young sires. Overall, of the 1361 bulls offered, 533 are A2A2 bulls, 636 are A1A2 (carriers) and only 192 are A1A1. Included in this evaluation are TPI, milk, fat, type, UDC (udder composite), FLC (feet and legs composite) and productive life for the 1361 bulls overall as well as for each group (A1A1, A1A2, and A2A2). These results are summarized in Table 1. Of this group, A1A1 bulls represent the largest spectrum of genetic selection containing both the upper echelon of included genetic traits while also representing the vast majority of the lowest trait values. The A2A2 bulls have a higher *average* TPI, milk and fat when compared with the average for all Holstein bulls. However, the A1A1 bulls average a higher type score, FLC and productive life when compared with the *average* for all Holstein bulls. We can see almost a split between the A2A2 bulls and the A1A1 bulls with A2A2 bulls *averaging* higher for production traits (TPI, milk, fat) and A1A1 bulls topping the spectrum in type and productive life. This indicates that somewhere during the selection for A2A2 bulls, while we are improving production traits, we may have made some sacrifices in type and health traits. Overall the A1A2 bulls appear to fall middle of the road on most traits, neither excelling nor falling to the bottom. For this simple analysis, it would appear that if interested in A2 genetics, the homozygous A2A2 bulls would give you the most "bang for your buck" versus A1A2. That translates literally as these A2A2 bulls, all other things being equal, will come at a premium.

How does this change the way producers select their bulls? First off, the forecast for A2 milk looks strong. The a2 Milk Company based in New Zealand launched its A2 milk brand in the U.S. in April of 2015. As of November 2017, their products had reached the shelves of 3,600 stores which has since grown even more as they expanded to the Northeast in January 2018. The finished product has a $12.59 premium when compared to conventional milk (calculated at $2.81 conventional milk national average in US) and as news stations, websites and blogs get wind of the new product and promote it, sales have been steadily increasing, which contributed to the $16,062,000 accrued in sales in the US alone during the 2nd half of 2017. Currently, The a2 Milk Company is utilizing outside processing facilities to process their milk and the process to "get in" for a producer does require some extra effort, but is possible. One dairy producer in Nebraska, who sends half of his milk to an a2 Milk Company processor, notes some of these efforts as having each of his cows tested to ensure they produce only A2A2 milk and keeping his A2 milk equipment separated from his non A2 only milk equipment. But he believes "it's worth our time and effort to do it." Since the beta casein variant shows up in milk, a milk test is possible to determine the protein variants present but a hair root sample is more commonly used. Unlike transitioning to organic, this process doesn't have the hoops to jump through or take several years to switch but it does require elevated work and input costs when compared with conventional milk. Achieving and then maintaining through bull selection a homozygous A2 herd over time would alleviate most if not all of these additional costs. While producers in other areas of the country are jumping on the A2 wagon, the Southeast has yet to see those same opportunities due to lack of infrastructure. But that may be on the horizon with data coming out such as that from Dairy Herd Management in January 2018 that stated the largest milk sales of the a2 milk company were in California (the initial launch state for the company) and the Southeast. With favorable forecasts and big partnerships like with Fonterra, it is not unreasonable to think that A2 milk is not a fad and the need for A2 production in the southeast may be a real one in the not so distant future.

With the promising future that A2 milk has ahead, it might be worthwhile endeavor for producers to start considering breeding for A2 milk now, so that by the time those daughters are milking, they're not behind the 8 ball in the A2 milk movement. However, there is a broad spectrum of bulls out there, and some are better than others. The A2 milk gene shouldn't blind a producer to the other traits. From the analysis, it's seen that there are bulls out there that are A2A2 with -360 lbs. milk, 4 lbs. fat, 7 lbs. protein, 1.5 Type and 2.2 on Productive Life. Then there are other bulls that are also A2A2 with 2146 lbs. milk, 2752 TPI, 91 lbs. fat, 69 lbs. protein, 2.2 Type and 5.4 on Productive Life. Careful selection of bulls to fit your herd and breeding programs while also being A2A2 is possible. Making such selections ensures that a producer can not only make genetic progress towards an A2A2 herd, but also maintain and improve upon production and health traits. Unlike when polled genetics first hit the market, there are numerous, high quality A2A2 bulls to select from. It should be noted that you should expect to pay a premium for A2 bulls when compared to A1 bulls that have similar numbers. As dairy producers, it seems that forecasting the future is half of the job. In this case, hedging with A2 genetics might just be a sound bet.

UGA extension

Mastitis can affect your replacement herd this summer

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The summer months are always a challenge to maintain low SCC in the lactating herd. However, heifers should not be forgotten in a mastitis control and prevention program, especially during the summer. Research suggests that up to 90% of the replacement herd has a preexisting infection at calving (Nickerson et al., 1995). Further, daily incidence rates are higher for first parity cows compared to multiparous cows (De Vliegher et al., 2012, Figure 1). These preexisting infections damage mammary tissue, perhaps irreversibly for the lifetime of the animal. Animals without infections and low SCC during early infection produce more milk during lactation than infected counterparts (De Vliegher et al., 2012). Moreover, mammary infections and high SCC during the first lactation increases the risk of culling in current and future lactations (Beaudeau et al., 1995). The following sections will discuss heifer mastitis pathogens, associated sources of infection, and strategies to reduce heifer mammary infections.

Pathogens associated with heifer mastitis

Traditional "summer mastitis" is associated with *Streptococcus dysgalactiae* (an environmental strep) and *Trueparella pyogenes*. Traditional "summer mastitis" manifests as a clinical mastitis where the mammary gland and teat are swollen, red, and hot to the touch (especially those infections caused by T. pyogenes). Purulent discharge can be expressed from the infected quarter. In addition to common "summer mastitis" pathogens, *Staphylococcus aureus* and coagulase-negative staphylococci (CNS) are common heifer mastitis pathogens. These pathogens may infect the mammary gland at any time of the year, but rate of infection may also be higher in the summer. Environmental strep and CNS tend to cause subclinical mastitis in heifers, whereas *Staph. aureus* may either present as clinical or subclinical, and can become a chronic infection into lactation.

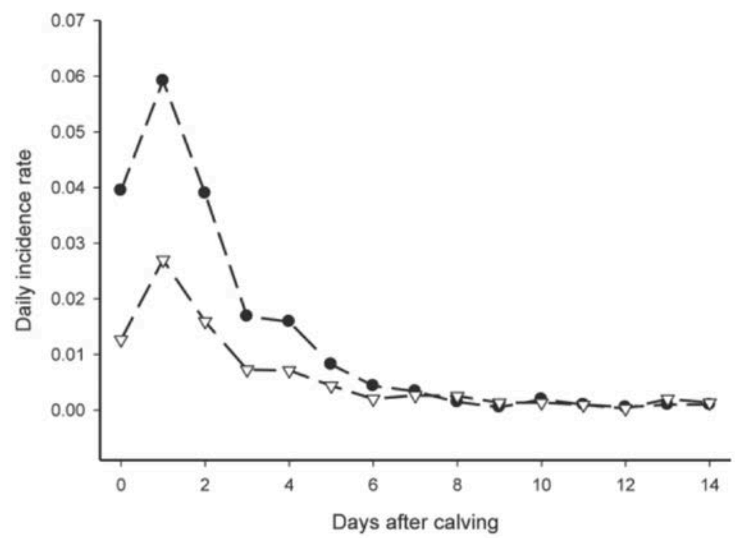

Figure 1. *Daily incidence rate of clinical mastitis for first parity cows (•) and multiparous cows (parity >1; ▽) (Image and legend adapted from De Vliegher et al., 2012).*

Sources of heifer mastitis pathogens

Causative mastitis pathogens are associated with a variety of sources. Flies are widely known to be associated with specific mastitis pathogens, whereas other sources, such as waste milk, are associated with increased heifer mastitis but the specific transmission route is unknown. Sources of heifer mastitis pathogens are listed with associated pathogen in parentheses, if known.

- Blood-sucking horn fly (Figure 2), *Haematobia irritans* (*Staph. aureus*)
- Sheep head fly, *Hydrotaea irritans* (Environmental strep. and *T. pyogenes*)
- Cross-suckling between calves
- Feeding mastitic milk

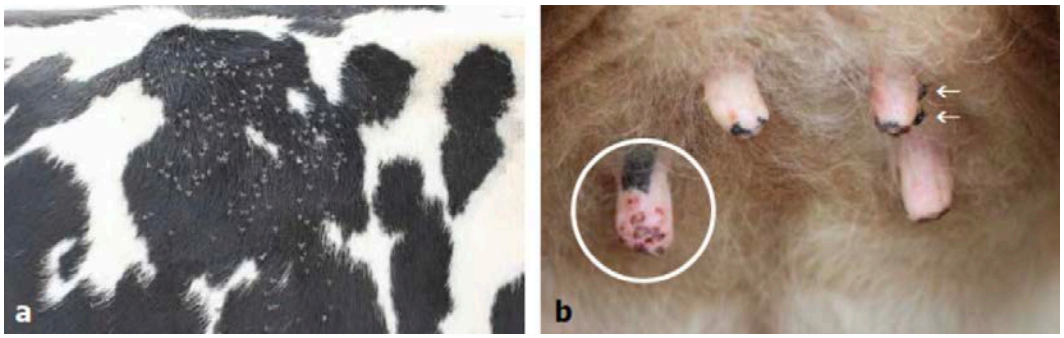

Figure 2. *a) Horn flies on the back of a Holstein heifer; b) Udder of a 10-month-old heifer illustrating horn flies (arrows) and scabs/lesions on teat ends. (Image and legend adapted from Nickerson and Kautz, 2013)*

Prevention and control of heifer mastitis

Nonantibiotic strategies should be the first line of defense against heifer mastitis. General strategies to reduce risk of heifer mastitis are discussed below.

- Housing, bedding, and pasture maintenance should be maintained to reduce exposure to environmental pathogens, especially streptococci.
  - Move hay feeders and shade structures periodically to decrease contact with accumulated manure (and high fly populations).
- Fly control is a critical factor in reducing heifer mastitis and should be continually evaluated to prevent rise of resistant fly populations.
- Heifers should be fed a balanced ration that prevents overconditioning prior to calving. Furthermore, transition cow management is integral to prevent metabolic stress and general disease risk, including mastitis. Avoid mineral and vitamin deficiencies, particularly selenium and vitamin E, to support a healthy immune system.
- Consider implementing mastitis vaccinations. Gram negative vaccinations may not reduce heifer mastitis as these pathogens are not typically found in heifers (*Escherichia coli*, *Klebsiella spp.*), but will support an effective immune response as heifers enter into their first lactation. The effect of *Staph. aureus* vaccinations are variable. In some studies, vaccinated heifers demonstrated reduced incidence of *Staph. aureus*, whereas later studies found vaccine use equivocal to non-vaccinated controls (Giraudo et al., 1997; Tenhagen et al., 2001).
- Utilize a teat sealant to prevent infections during close-up as teat orifice begins to dilate.

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When a known problem has been identified in first-lactation animals, *Staph. aureus* for example, antibiotics may be used in consultation with a veterinarian under a valid veterinary-client-patient relationship (Nickerson, 2009). The success rate for curing *Staph. aureus* is much greater, close to 100% for heifers, whereas the cure rates drop to around 50% in cows and even lower for chronic infections and older cows. Herd managers must consider costs associated with treatment of heifers (e.g., drug and labor expenses) and the timing at which antibiotic therapy is given. Previous research found that antibiotic therapy during the first (0–90 days), second (91–180 days), or third (181–270 days) trimester of pregnancy in heifers resulted in 67-100% cure rates, compared to only 25% spontaneous cure rate in untreated heifers (Owens et al., 2001). While treatment during all trimesters was effective in successfully curing most infections, treatment during the third trimester resulted in fewer new *Staph. aureus* infections contracted after treatment (Owens et al., 2001). Thus based on this research and later studies, administration 30-60 days prior to calving is recommended to cure existing infections and prevent new infections. Lastly, antibiotic residue testing should be conducted to ensure that animals are free of antibiotics at calving. Again, always consider these strategies in consultation with a veterinarian as this is extra-label use of dry cow therapy.

Final thoughts

Remember that the heifer's mammary gland is growing and any challenge to that process, such as mastitis, can negatively affect their productive life and genetic potential. Don't forget about your replacement herd in your mastitis prevention and control program. Documentation of infections in first parity cows should be done to determine if there is a heifer mastitis problem in your herd. When possible, culturing milk samples from first lactation animals early in lactation (e.g., 3-10 days postpartum) may help target subclinically infected animals, especially infections caused by *Staph. aureus*.

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Direct Fed Microbials can work in dairy cattle, but how?

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In our previous article, we discussed probiotic approaches to improving dairy performance. To improve milk production efficiency, dairy cattle are often fed probiotics, also known in the animal industry as "Direct-Fed Microbials" (or DFM), which can alter the microbial population of the rumen and gut of cattle. While some DFM have been rightfully described as "magic foo-foo dust", there are many with consistently positive results which are supported by field data to support their inclusion in dairy rations. Now we will discuss how probiotics and prebiotics are thought to work, and how we can use these approaches to not only improve feed efficiency, but also animal health and food safety.

The rumen and gastrointestinal tract of cattle

Cattle live in a symbiotic relationship with their microbial population, and this relationship is critical to production efficiency. The ruminant gastrointestinal tract in milking cows is a complex and well established ecosystem, much like what you find in the forests of the Southeast. To date, more than 2500 known species of bacteria, protozoa, and fungi have been isolated from the gut of cattle. Much like in an established forest, all environmental niches (or jobs) are filled by this mixed population. The diversity of microbes means there are a huge number of biochemical avenues available for bacteria to utilize to breakdown feeds. Forages are the central dietary ingredient in dairy diets, but because the components of forage have to be broken down under oxygen-free conditions, cattle are relatively inefficient compared to chicken and pork production. So it has always been the dream to be able to increase the efficiency of cattle by selecting a microbial population that can breakdown forage and produce more volatile fatty acids (VFA) for cattle to utilize for energy. Using an existing or introduced microbial population to improve some aspect of animal production has been termed a "probiotic" approach. However, the mechanisms behind this approach in cattle can be quite different from the traditional model of how probiotics work that we see in television commercials.

DFM, milk production, and performance

Dairy rations include DFM primarily to improve milk production efficiency. Many studies demonstrate that probiotic products can enhance production efficiency and thus improve dairy farm profitability. Yet this can vary widely based on DFM type (i.e., fungal vs. bacterial; live culture vs. fermentation extract), organism utilized, diet that the cattle are fed, as well as the stage of lactation/growth (Windschitl, 1992). Therefore it is difficult to say "product x always works, and product y never does", and while that does not help you as a producer determine which products to select.

In the cattle industry, the most widely used bacterial probiotics contain lactic acid bacteria (LAB), such as *Propionibacteria* and *Lactobacillus*. Feeding LAB have increased daily milk yield and fat corrected milk, with no decrease in reproductive rates. This impact on dairy production is likely caused (at least in early lactation cows) by an increase in ruminal volatile fatty acids, a decrease in dry matter intake, and possibly with lower blood glucose and insulin concentrations in mid-late lactation cattle. Yet another LAB showed increased blood glucose and milk production in mid lactation, but not during the high energy demand early lactation period. However, inclusion of another LAB in diets immediately before freshening showed an increase in blood glucose levels postpartum, along with milk yield and DMI in a short window after freshening. While LAB are often used as DFM because of their ease of use and regulation, in recent years more typical ruminal bacteria (such as Megasphaera) have been utilized in DFM. When the fiber degrading bacterium *Ruminococcus flavefaciens* was included, the digestibility of hay increased, but this bacteria had to be fed daily for this bacteria to remain active in the gut of cattle. Feeding a DFM that contained the ruminal bacterium *Prevotella bryantii* was fed to early lactation cattle resulted in an increase in milk fat concentration and ruminal fermentation products. Further studies using the lactate-utilizing ruminal bacterium *Megasphaera elsdenii* found that this bacteria could reduce ruminal lactate accumulation that can lead to the development of subacute and acute acidosis.

The most common fungal or yeast DFM products fed to dairy cattle include those made from the yeast *Sacharomyces* and the fungus *Aspergillus*. In general, some of the fungal DFM preparations are live cultures, while others are not living (fermentation extracts). It appears that the feeding of the non-living cultures act more as a source of nutrients for the typical gut bacterial population, or they modify the immune system of the cow. When fungal and yeast cultures were compared directly it was found that ruminal pH, ammonia N concentration, and total VFA concentration were not different from each other

Typically, live cultures and fermentation extracts must be continuously fed to maintain their beneficial impacts. Overall, using yeast supplementation increased rumen pH and VFA concentrations and decreased the ruminal lactic acid concentrations, yet had no effect on the energy availability ratio of the VFA (acetate:propionate ratio), DMI, milk yield and fat corrected milk also were also increased by yeast supplementation. The addition of *Aspergillus oryzae* cultures increased ruminal pH and VFA production more on low forage compared to high forage diets. In other studies, milk yields and production efficiency were improved in early lactation cows fed a high grain diet supplemented with an *Aspergillus oryzae* culture, but the effects were less pronounced in mid-lactation cows. Yet other studies demonstrated that *Aspergillus oryzae* supplementation had no impact on DMI, milk yield or diet digestibility. The addition of yeast culture increased digestibility of OM and CP, but the use of fungal cultures stimulated the native ruminal cellulolytic bacterial counts. The inclusion of the yeast *S. cerevisiae* culture in dairy cow rations with relatively high concentrate levels caused an increase in DMI and increased milk yield (especially in mid lactation cattle) as well as a decrease in lactate accumulation and a decrease in the acetate:propionate ratio.

Collectively, the evidence supports the fact that DFM (bacterial or fungal) can improve milk production and production efficiency in dairy cows. However, the results have not always been consistent in magnitude. Many of the benefits of DFM feeding appear to be greatest in animals undergoing transitions (e.g., parturition, early lactation) and situations where animals suffer under to hot weather, low quality diets, or other stresses.

DFM and animal health

Sub-acute ruminal acidosis (SARA) is a condition associated with the consumption of large amounts of readily fermentable grain by cattle resulting in reduced DMI, cyclic feeding and milk production decreases which impact production efficiency and profit. A major endproduct of starch fermentation by LAB is lactic acid, which is a strong acid that lowers the pH of the ruminal fluid and keratinizes the ruminal epithelium. When cattle are mildly acidotic they are subject to cyclic feeding (and associated production disruption) as well as to peritonitis, liver abscesses and laminitis. Because dairy cattle are often maintained on high grain rations for long periods of time, chronic SARA is often found in these animals, and is often responsible for milk-fat depression. Many of the dairy DFM result in an increase in ruminal pH to combat the typhooning effect of SARA before it impacts milk production or animal health.

Not only can DFM be used to prevent gastrointestinal illnesses, but they have been shown to impact more systematic illnesses and act as disease preventatives. The addition of bovine vaginal LAB (primarily) as a probiotic preparation to pregnant dairy cattle, inhibited the growth of metritis-causing organisms. Other research on probiotic preparations found that the bacteria, as well as LAB, living on the surface of a healthy udder could inhibit the growth of mastitis-causing bacteria, which is possibly linked to stimulation of immune response through upregulation of immune mediating proteins in the mammary gland.

Food Safety Benefits of DFM

Escherichia coli O157:H7 has been declared by the Food Safety Inspection Service to be an adulterant in ground beef; because of this there has been intensified interest in probiotic research aimed at reducing *E. coli* O157:H7 in both beef and dairy cattle. One DFM based on lactic acid bacteria (LAB) reduced fecal shedding of *E. coli* O157:H7 in sheep and another LAB culture reduced *E. coli* O157:H7 shedding by more than 50% in finishing cattle. Additional research indicated that this commercial LAB DFM reduced fecal *E. coli* O157:H7 populations in cattle from 46% of animals to 13%. In another study, a different LAB DFM significantly reduced fecal shedding of *E. coli* O157:H7 but not of the other foodborne pathogenic bacteria, *Salmonella*. To date, the impacts of these LAB DFM on dairy production parameters have not been reported, so their utility to the dairy industry (other than in meat safety) cannot be estimated.

Conclusion

Ultimately, we are still in the infancy of understanding how the microbial population of animals impact the production of food. Probiotics or DFM are an old technique that we "understand"; but the more we learn, the more we understand how little we really know about why they work at times, and why they don't at others. However, it is clear that probiotics have a distinct role in dairy cattle production, and they can be extremely beneficial to producer profitability. As we learn more about how the gut microbial population works naturally, we will understand more about how DFM affect cattle and their microbial populations, as well as their production efficiency, animal health, and food safety.

Changes in the Georgia dairy industry over the past 40 years: What's Next?

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There have been many changes in the dairy industry since I first moved to Georgia in 1977. At that time there more than 1,200 permitted Grade A dairies in Georgia in contrast to 172 as of January 1, 2018. In the late 70's there were numerous bottling plants located throughout the state including Mathis Dairy which was one of the few certified raw milk processors in the US. Atlanta Dairies operated a cheese plant in Carrolton seasonally and Borden's had a condensed milk plant in Ralston to processed milk from the remaining Grade B producers. Today the majority of these milk plants have closed and a few larger plants have taken their place. In contrast with the late 70's, today there are several producers who are processing some of their milk. The recent announcement by Dean's Foods in May that they would be closing their plant at Braselton is the most recent change related to processing milk in Georgia. These changes occurred for a variety of reasons including increasing efficiencies of production and lower cost by consolidating production, improved highways and transportation, as well as other reasons. The most recent closure is related to the continued decline in fluid milk consumption and need to consolidate production in other plants to improve operating efficiencies. If you go to the grocery store, take a few minutes to look at the "dairy case". I have observed the dairy case in many stores that there is almost an equal amount of shelf space for milk bottled imported from outside the state as there is of milk from this region. This doesn't count all of the imitation milk products which has increased significantly and decreased milk sales.

The average herd size was approximately 120 cows in the late 70's. Today, the herd size is close to 460 cows and there are multiple herds with well above 1,000 cows. It was rare if anyone operated more than one dairy, however there are several producers who have multiple operations today. While many dairies depended solely on family labor to milk, take care of calves, and produce feed in the 70's, today most dairies depend on hired help as herd size has grown. Most producers indicate difficulty finding and retaining dependable labor. As such there are several producers looking at the prospects of robotic milking stations to address the problem. Many producers have already incorporated robotic calf feeders that not only reduce labor requirements, but provide opportunities for feeding more milk, more frequently so they can improve calf health and growth.

Average milk yield was just over 10,000 lb. per cow in 1980 based on USDA-ERS data. In 2017 Georgia producers averaged 21,905 lb. per cow with some producers recording over 30,000 lb. per cow. Part of this improvement in production is due to genetics, but producers have improved facilities greatly as well as provide better nutrition, cow comfort, and overall management compared to the late 70's

When I arrived in 1977, the Georgia Federal Order included a three year base plan with a base building period in the fall. The goal was to encourage more production in the fall when milk was short and to discourage production in the spring when milk had to be shipped out of the region because the cheese plant in Carrolton (and others in the SE) couldn't handle all of the excess milk produced. The three year plan changed to an annual base around 1980 before being eliminated when the Federal Orders were consolidated in the mid 80's. During the late 70's there were several new dairies build in the state to help supply the markets. Today, the supply and demand situation has changed so that some cooperatives have assigned bases to producers in an attempt to reduce the seasonal production and stabilize production throughout the year. Another change is that new producers are not being sought in Georgia.

The old cigarette ad slogan "You've come a long way baby" is true for the Georgia dairy industry. But what is next? The Georgia dairy industry will continue to evolve if it is to survive. This is the same for any industry or individual operation. Compared with other states in the SE, Georgia has increased total milk production to 120% of what it was in 1995 whereas other states in the SE are only production 20% of what they produced in 1995.

One of the biggest challenges to address is to develop of new markets (processing) for the milk. The alternative is to watch fluid milk sales continue to decline reducing the need for locally produced milk. This should be accompanied by efforts to develop new fluid product as well as improve fluid milk sales. The cheese plant operated by Atlanta Dairies was to process surplus milk into a product that could be more economically shipped and sold domestically. Remember that the interstate system was not complete at that time nor was it as as easy to get from point A to B as it is today. Exports were not a factor in the 70's and 80's. Today approximately 15% of the total milk production is exported and nationally the goal is to increasing exports another 5%. Currently, the SE is not a participant in the export market. If Georgia producers want to have the option to increase production in the future, additional market options must be developed that are not dependent of shipping milk to plants north of the Mason-Dixon Line for processing which is not profitable from a transportation standpoint and the plants there do not necessarily want or need the additional milk given the increased production in the upper Midwest.

Producers should also evaluate operations to identify to how to be more efficiently, both in terms of reducing production cost and labor utilization. Many producers have constructed dry cow – maternity barns that provide improved cow comfort for dry cows, decrease metabolic issues post calving, and support greater milk production. This is one way to improve efficiency (more milk, fewer metabolic issues, and fewer involuntary culls) and economics as well reduce seasonality. There are also economics of scale to consider which may include working with a neighbor or forming a buying cooperative to take advantage of volume discounts. Robotic technology has improved greatly and offers options to consider as part of the answer to labor issues. The type of robotics and extent (milking, feeding, pushing up feed, etc.) needed for each farm differs. Remember that robotic technology does not completely replace labor and this technology requires a different skill set (repairs, interpreting data, etc.) compared with what we have done in the past.

Occasionally it is good to look back to see how things have changed over time to appreciate everything. With low milk prices we have experiences the last few years, it is hard for many of us to think about the future; however, I would suggest that now is the time to look at your operation and look at how it has changed as well as evaluate what additional improves are needed to make your more competitive in the future and begin to plan for the next decade. As a industry, we need to look at developing additional markets options that will provide opportunities for the next generation as well.

Profitable decisions: Efficient use of resources

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Over the years phases such as “bigger is better”, “max yield”, “efficiency”, “max profit”, “borrow now and pay later with cheaper money”, and “effective leverage” have been used to describe a financial and production management philosophy. These programs were recommended at different time periods. Producers were successfully following this advice but as times changed many times problems developed and the programs failed.

Striving for more milk production per cow is typically successful. One needs to know all of the inputs so the cost and returns can be calculated. Eventually a point will be reached where the cost of increased milk will not be covered by the value of the extra pounds of milk produced. The cost of each pound of milk a cow produces is not constant though we calculate it that way. That is why nutritionists constantly talk about forage quality and where it best fits in the ration for cows with different levels of milk production and days in milk.

Another decision relating to resources is the size of parlor one builds. Factors that need to be considered include: the cost of the parlor, size of the herd and amount of time spent milking. It is the interaction of these that will make the best of use of your resources. For smaller herds, the decision should also include what you would do if you are not milking. Can you increase your farms overall production by spending less time in the parlor and converting that extra time into other production activities?

The use of information and the ability to change is critical as one tries to survive through the years. Do not get locked into a way of doing things. One time I did a ration for a producer. His herd had produced between 50-55 pounds milk per cow for over 10 years and he had fed the same forage free choice during this time. He fed grain in the parlor and he wanted me to balance a grain mix for him. I balanced the grain mix and sent it to him. The mix cost $210/ton. He called back and said that was unacceptable as the price of the mix had to be below $200. I recalculated. I got a mix for $200.50/ton that fed a few more pounds but the ration lowered his Income Over Feed Cost by $0.25/cow/day. He called back and said it was unacceptable. I tried to explain that he was making less money per cow per day than before but he said that mix was unacceptable. So I balanced the grain mix again. The third mix I sent cost $198.00/ton and lowered his IOFC by $0.53/cow/day from the original ration. He called back and thanked me for a good ration. Remember to look at the big picture and do not focus on one detail.

Efficiently using your resources is trying to maintain a balance among all of your options. It is difficult and needs constant attention to details and the changing environment of your farm and the dairy industry.

Important Dates

2018-2019

Georgia National Fair

- October 4-14, 2018
- 401 Larry Walker Parkway, Perry, GA
- http://www.gnfa.com/

Sunbelt Agriculture Expo

- October 16-18, 2018
- 290-G Harper Boulevard, Moultrie, GA 31788-2157
- http://sunbeltexpo.com/

Georgia Dairy Conference

- January 21-23, 2019
- Savannah Marriott Riverfront, 100 General McIntosh Boulevard, Savannah, GA 31401
- http://www.gadairyconference.com/

Top GA DHIA By Test Day Milk Production – March, 2018										
					Test Day Average				Yearly Average	
Herd	County	Br.	Test Date	[1]Cows	% in Milk	Milk	% Fat	TD Fat	Milk	Lbs. Fat
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	3/20/2018	442	87	106.1	3.4	3.26	30849	1147
DAVE CLARK*	Morgan	H	3/5/2018	1155	91	100.2	4.3	3.97	31547	1298
J.EVERETT WILLIAMS*	Morgan	X	3/15/2018	2003	87	89.8	4.3	3.36	27819	
DANNY BELL*	Morgan	H	3/8/2018	274	90	89.1	4.1	3.27	29833	1140
A & J DAIRY*	Wilkes	H	3/29/2018	436	92	88.2			28262	
AMERICAN DAIRYCO-GEORGIA,LLC.*	Mitchell	H	3/22/2018	3564	91	86.3	3.8	3.07	25261	937
SCOTT GLOVER	Hall	H	3/14/2018	219	88	85	3.7	2.93	27066	1006
EBERLY FAMILY FARM*	Burke	H	3/26/2018	914	88	85	3.6	2.82	26746	978
COASTAL PLAIN EXP STATION*	Tift	H	3/27/2018	270	89	84.6	3.5	2.71	25310	922
DOUG CHAMBERS	Jones	H	3/27/2018	438	88	81.1	3.6	2.55	25271	879
SOUTHERN SANDS FARM	Jenkins	H	3/1/2018	89	90	80.9	3.5	2.72	24898	881
VISSCHER DAIRY*	Jefferson	H	3/22/2018	911	89	80.3	3.5	2.61	22743	787
R & D DAIRY	Lamar	H	3/13/2018	331	90	79.6	4.2	3	24607	972
PHIL HARVEY #2*	Jasper	H	3/1/2018	1319	87	79.6	3.7	2.59	24514	902
LARRY MOODY	Ware	H	2/27/2018	1008	89	78.9	3.6	2.57	24387	812
MARTIN DAIRY L. L. P.	Hart	H	2/19/2018	348	91	77.9	3.9	2.87	23841	930
IRVIN R YODER	Macon	H	3/5/2018	214	91	77.6	3.9	2.74	24675	928
TWIN OAKS FARM	Jefferson	H	2/23/2018	100	90	75.2	3.5	2.56	21697	837
WILLIAMS DAIRY	Taliaferro	H	3/8/2018	138	89	75.1	3.6	2.5	21968	818
WHITEHOUSE FARM	Macon	H	2/27/2018	228	91	74.8	3.3	2.26	22200	802

[1]Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).

Top GA DHIA By Test Day Fat Production – March 2018										
					Test Day Average				Yearly Average	
Herd	County	Br.	Test Date	[1]Cows	% in Milk	Milk	% Fat	TD Fat	Milk	Lbs. Fat
DAVE CLARK*	Morgan	H	3/5/2018	1155	91	100.2	4.3	3.97	31547	1298
J.EVERETT WILLIAMS*	Morgan	X	3/15/2018	2003	87	89.8	4.3	3.36	27819	
DANNY BELL*	Morgan	H	3/8/2018	274	90	89.1	4.1	3.27	29833	1140
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	3/20/2018	442	87	106.1	3.4	3.26	30849	1147
AMERICAN DAIRYCO-GEORGIA,LLC.*	Mitchell	H	3/22/2018	3564	91	86.3	3.8	3.07	25261	937
R & D DAIRY	Lamar	H	3/13/2018	331	90	79.6	4.2	3	24607	972
SCOTT GLOVER	Hall	H	3/14/2018	219	88	85	3.7	2.93	27066	1006
MARTIN DAIRY L. L. P.	Hart	H	2/19/2018	348	91	77.9	3.9	2.87	23841	930
EBERLY FAMILY FARM*	Burke	H	3/26/2018	914	88	85	3.6	2.82	26746	978
CHARLES STEWART	Greene	X	3/13/2018	77	88	74.3	3.8	2.81	21292	833
IRVIN R YODER	Macon	H	3/5/2018	214	91	77.6	3.9	2.74	24675	928
SOUTHERN SANDS FARM	Jenkins	H	3/1/2018	89	90	80.9	3.5	2.72	24898	881
COASTAL PLAIN EXP STATION*	Tift	H	3/27/2018	270	89	84.6	3.5	2.71	25310	922
BERRY COLLEGE DAIRY	Floyd	J	3/19/2018	32	82	62.9	5.2	2.65	16272	753
SOUTHERN ROSE FARMS	Laurens	H	2/15/2018	101	87	70.4	4	2.62	20648	808
VISSCHER DAIRY*	Jefferson	H	3/22/2018	911	89	80.3	3.5	2.61	22743	787
PHIL HARVEY #2*	Jasper	H	3/1/2018	1319	87	79.6	3.7	2.59	24514	902
BRENNEMAN FARMS	Macon	H	3/6/2018	48	92	72.3	3.6	2.57	21135	790
CECIL DUECK	Jefferson	H	3/26/2018	76	88	73.3	3.8	2.57	21476	779
LARRY MOODY	Ware	H	2/27/2018	1008	89	78.9	3.6	2.57	24387	812
RUFUS YODER JR	Macon	H	3/27/2018	157	91	69.6	3.8	2.57	23497	815

[1]Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).

Top GA DHIA By Test Day Milk Production – April 2018										
					Test Day Average				Yearly Average	
Herd	County	Br.	Test date	[1]Cows	% in Milk	Milk	% Fat	TD Fat	Milk	Lbs. Fat
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	4/24/2018	431	87	107.6	3.4	3.3	31006	1145
DAVE CLARK*	Morgan	H	3/29/2018	1151	91	98.9	4.2	3.79	31730	1314
J.EVERETT WILLIAMS*	Morgan	X	4/9/2018	1982	87	90.1	4.2	3.3	27836	
A & J DAIRY*	Wilkes	H	3/29/2018	436	92	88.2			28262	
DANNY BELL*	Morgan	H	4/5/2018	282	90	87.4	4	3.22	29797	1143
AMERICAN DAIRYCO-GEORGIA,LLC.*	Mitchell	H	3/22/2018	3564	91	86.3	3.8	3.07	25261	937
COASTAL PLAIN EXP STATION*	Tift	H	4/19/2018	268	89	85.2	3.7	2.85	25429	925
EBERLY FAMILY FARM*	Burke	H	3/26/2018	914	88	85	3.6	2.82	26746	978
SCOTT GLOVER	Hall	H	4/12/2018	214	88	83.7	3.9	2.92	27174	1009
SCHAAPMAN HOLSTEINS*	Wilcox	H	4/3/2018	708	89	83.5	3.5	2.72	27006	960
TROY YODER	Macon	H	3/28/2018	299	87	83	4	2.79	24765	1022
DOUG CHAMBERS	Jones	H	4/24/2018	434	88	81.1	3.4	2.46	25129	874
VISSCHER DAIRY*	Jefferson	H	3/22/2018	911	89	80.3	3.5	2.61	22743	787
WHITEHOUSE FARM	Macon	H	4/6/2018	241	91	79.3	3.6	2.62	22382	807
MARTIN DAIRY L. L. P.	Hart	H	4/19/2018	338	90	79.2	3.9	3.01	23633	932
PHIL HARVEY #2*	Jasper	H	4/13/2018	1410	87	78.3	3.6	2.59	24287	895
LARRY MOODY	Ware	H	3/30/2018	1023	89	78.1	3.6	2.54	24283	821
IRVIN R YODER	Macon	H	4/5/2018	207	91	76.7	3.7	2.57	24560	927
R & D DAIRY	Lamar	H	4/17/2018	326	90	75.9	4.1	2.84	24782	982
SOUTHERN SANDS FARM	Jenkins	H	4/18/2018	96	91	75.7	3.5	2.56	24673	875

[1]Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).

Top GA DHIA By Test Day Fat Production - April 2018										
					Test Day Average				Yearly Average	
Herd	**County**	**Br.**	**Test Date**	**[1]Cows**	**% in Milk**	**Milk**	**% Fat**	**TD Fat**	**Milk**	**Lbs. Fat**
DAVE CLARK*	Morgan	H	3/29/2018	1151	91	98.9	4.2	3.79	31730	1314
J.EVERETT WILLIAMS*	Morgan	X	4/9/2018	1982	87	90.1	4.2	3.3	27836	
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	4/24/2018	431	87	107.6	3.4	3.3	31006	1145
DANNY BELL*	Morgan	H	4/5/2018	282	90	87.4	4	3.22	29797	1143
AMERICAN DAIRYCO-GEORGIA,LLC.*	Mitchell	H	3/22/2018	3564	91	86.3	3.8	3.07	25261	937
MARTIN DAIRY L. L. P.	Hart	H	4/19/2018	338	90	79.2	3.9	3.01	23633	932
SCOTT GLOVER	Hall	H	4/12/2018	214	88	83.7	3.9	2.92	27174	1009
COASTAL PLAIN EXP STATION*	Tift	H	4/19/2018	268	89	85.2	3.7	2.85	25429	925
R & D DAIRY	Lamar	H	4/17/2018	326	90	75.9	4.1	2.84	24782	982
EBERLY FAMILY FARM*	Burke	H	3/26/2018	914	88	85	3.6	2.82	26746	978
TROY YODER	Macon	H	3/28/2018	299	87	83	4	2.79	24765	1022
TWIN OAKS FARM	Jefferson	H	4/14/2018	99	90	73.5	3.8	2.78	21853	848
SCHAAPMAN HOLSTEINS*	Wilcox	H	4/3/2018	708	89	83.5	3.5	2.72	27006	960
BOB MOORE	Putnam	H	4/2/2018	200	89	70.7	3.9	2.69	20344	788
SOUTHERN ROSE FARMS	Laurens	H	4/19/2018	87	88	69.2	4.1	2.66	20758	819
WHITEHOUSE FARM	Macon	H	4/6/2018	241	91	79.3	3.6	2.62	22382	807
VISSCHER DAIRY*	Jefferson	H	3/22/2018	911	89	80.3	3.5	2.61	22743	787
PHIL HARVEY #2*	Jasper	H	4/13/2018	1410	87	78.3	3.6	2.59	24287	895
CECIL DUECK	Jefferson	H	3/26/2018	76	88	73.3	3.8	2.57	21476	779
IRVIN R YODER	Macon	H	4/5/2018	207	91	76.7	3.7	2.57	24560	927
RUFUS YODER JR	Macon	H	3/27/2018	157	91	69.6	3.8	2.57	23497	815

[1]***Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).***

Top GA DHIA By Test Day Milk Production – May 2018

					Test Day Average				Yearly Average	
Herd	**County**	**Br.**	**Test Date**	**[1]Cows**	**% in Milk**	**Milk**	**% Fat**	**TD Fat**	**Milk**	**Lbs. Fat**
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	4/24/2018	431	87	107.6	3.4	3.3	31006	1145
DAVE CLARK*	Morgan	H	5/7/2018	1178	91	95.6	4.1	3.6	31884	1328
J.EVERETT WILLIAMS*	Morgan	X	5/14/2018	1930	87	89.3	4.4	3.56	27892	
A & J DAIRY*	Wilkes	H	5/2/2018	435	91	88.1			28271	
DANNY BELL*	Morgan	H	5/10/2018	276	90	86.8	3.9	3.03	29766	1143
EBERLY FAMILY FARM*	Burke	H	4/30/2018	850	88	84.7	3.4	2.64	26758	972
COASTAL PLAIN EXP STATION*	Tift	H	5/17/2018	273	89	83.8	3.5	2.7	25570	928
LARRY MOODY	Ware	H	4/27/2018	1016	89	83	3.4	2.52	24224	829
TROY YODER	Macon	H	4/26/2018	300	87	81.6	4	2.77	24714	1017
SCOTT GLOVER	Hall	H	5/18/2018	209	88	81.3	3.6	2.61	27128	1011
DOUG CHAMBERS	Jones	H	4/24/2018	434	88	81.1	3.4	2.46	25129	874
PHIL HARVEY #2*	Jasper	H	5/24/2018	1410	87	80.9	3.8	2.64	24358	899
MARTIN DAIRY L. L. P.	Hart	H	4/19/2018	338	90	79.2	3.9	3.01	23633	932
SCHAAPMAN HOLSTEINS*	Wilcox	H	5/19/2018	693	89	79.2	3.8	2.88	27117	964
IRVIN R YODER	Macon	H	5/9/2018	207	91	77.4	3.8	2.5	24217	918
VISSCHER DAIRY*	Jefferson	H	5/8/2018	903	89	77.1	3.4	2.41	23164	795
R & D DAIRY	Lamar	H	4/17/2018	326	90	75.9	4.1	2.84	24782	982
SOUTHERN SANDS FARM	Jenkins	H	4/18/2018	96	91	75.7	3.5	2.56	24673	875
TWIN OAKS FARM	Jefferson	H	5/16/2018	94	90	75.2	4	3	22066	861
WILLIAMS DAIRY	Taliaferro	H	4/26/2018	137	89	73.2	3.8	2.54	22083	820

[1]***Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).***

Top GA DHIA By Test Day Fat Production – May 2018										
					Test Day Average				Yearly Average	
Herd	County	Br.	Test Date	[1]Cows	% in Milk	Milk	% Fat	TD Fat	Milk	Lbs. Fat
DAVE CLARK*	Morgan	H	5/7/2018	1178	91	95.6	4.1	3.6	31884	1328
J.EVERETT WILLIAMS*	Morgan	X	5/14/2018	1930	87	89.3	4.4	3.56	27892	
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	4/24/2018	431	87	107.6	3.4	3.3	31006	1145
DANNY BELL*	Morgan	H	5/10/2018	276	90	86.8	3.9	3.03	29766	1143
MARTIN DAIRY L. L. P.	Hart	H	4/19/2018	338	90	79.2	3.9	3.01	23633	932
TWIN OAKS FARM	Jefferson	H	5/16/2018	94	90	75.2	4	3	22066	861
SCHAAPMAN HOLSTEINS*	Wilcox	H	5/19/2018	693	89	79.2	3.8	2.88	27117	964
R & D DAIRY	Lamar	H	4/17/2018	326	90	75.9	4.1	2.84	24782	982
TROY YODER	Macon	H	4/26/2018	300	87	81.6	4	2.77	24714	1017
COASTAL PLAIN EXP STATION*	Tift	H	5/17/2018	273	89	83.8	3.5	2.7	25570	928
SOUTHERN ROSE FARMS	Laurens	H	4/19/2018	87	88	69.2	4.1	2.66	20758	819
EBERLY FAMILY FARM*	Burke	H	4/30/2018	850	88	84.7	3.4	2.64	26758	972
PHIL HARVEY #2*	Jasper	H	5/24/2018	1410	87	80.9	3.8	2.64	24358	899
SCOTT GLOVER	Hall	H	5/18/2018	209	88	81.3	3.6	2.61	27128	1011
BOB MOORE	Putnam	H	5/8/2018	190	89	67.6	3.9	2.6	20341	792
SOUTHERN SANDS FARM	Jenkins	H	4/18/2018	96	91	75.7	3.5	2.56	24673	875
WILLIAMS DAIRY	Taliaferro	H	4/26/2018	137	89	73.2	3.8	2.54	22083	820
LARRY MOODY	Ware	H	4/27/2018	1016	89	83	3.4	2.52	24224	829
JOHN WESTSTEYN*	Pierce	X	5/4/2018	1176	91	68	4	2.51	21184	827
IRVIN R YODER	Macon	H	5/9/2018	207	91	77.4	3.8	2.5	24217	918

[1]Minimum herd or permanent string size of 20 cows. Yearly average calculated after 365 days on test. Test day milk, marked with an asterisk (*), indicates herd was milked three times per day (3X). Information in this table is compiled from Dairy Records Management Systems Reports (Raleigh, NC).

Top GA Lows Herds for SCC –TD Average Score – March 2018									
Herd	**County**	**Test Date**	**Br.**	**[1]Cows**	**Milk-Rolling**	**SCC-TD-Average Score**	**SCC-TD-Weight Average**	**SCC-Average Score**	**SCC-Wt.**
DAVID ADDIS	Whitfield	3/22/2018	H	34	19066	1.2	39	1.1	63
BERRY COLLEGE DAIRY	Floyd	3/19/2018	J	32	16272	1.5	61	1.4	59
RONNIE ROBINSON	Spalding	3/20/2018	H	106	15800	1.6	114	2.1	168
BRENNEMAN FARMS	Macon	3/6/2018	H	48	21135	1.7	115	1.7	135
SOUTHERN SANDS FARM	Jenkins	3/1/2018	H	89	24898	1.8	119	1.9	148
J.EVERETT WILLIAMS*	Morgan	3/15/2018	X	2003	27819	1.8	144	1.8	139
EUGENE KING	Macon	3/23/2018	H	116	19663	1.9	100	2.5	238
GODBEE FARMS	Jenkins	3/15/2018	X	145	16327	1.9	114	2.7	285
JEFF WOOTEN*JEFF	Putnam	3/7/2018	H	265	18445	1.9	131	2.4	192
COASTAL PLAIN EXP STATION*	Tift	3/27/2018	H	270	25310	1.9	165	2.2	202
JAMES W MOON	Morgan	3/20/2018	H	130	18513	1.9	189	2	161
DAVE CLARK*	Morgan	3/5/2018	H	1155	31547	2	171	2	223
ALEX MILLICAN	Walker	2/26/2018	H	101	18493	2	191	2	179
EBERLY FAMILY FARM*	Burke	3/26/2018	H	914	26746	2.1	181	2.3	207
JERRY SWAFFORD	Putnam	2/26/2018	H	204	18542	2.2	139	3	261
DANNY BELL*	Morgan	3/8/2018	H	274	29833	2.2	157	2.1	199
MARTIN DAIRY L. L. P.	Hart	2/19/2018	H	348	23841	2.2	200	2.4	193
IRVIN R YODER	Macon	3/5/2018	H	214	24675	2.3	149	2.1	134
SCOTT GLOVER	Hall	3/14/2018	H	219	27066	2.3	150	2.4	158
PHIL HARVEY #2*	Jasper	3/1/2018	H	1319	24514	2.3	164	2.7	242

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UGA extension

Top GA Lows Herds for SCC –TD Average Score – April 2018									
Herd	**County**	**Test Date**	**Br.**	**[1]Cows**	**Milk-Rolling**	**SCC-TD-Average Score**	**SCC-TD-Weight Average**	**SCC-Average Score**	**SCC-Wt.**
BERRY COLLEGE DAIRY	Floyd	4/24/2018	J	32	16301	1.3	38	1.4	56
JEFF WOOTEN*JEFF	Putnam	4/3/2018	H	273	18380	1.5	80	2.3	176
ALEX MILLICAN	Walker	4/3/2018	H	102	18452	1.6	109	2	175
RONNIE ROBINSON	Spalding	3/20/2018	H	106	15800	1.6	114	2.1	168
BRENNEMAN FARMS	Macon	4/13/2018	H	50	20823	1.6	303	1.7	154
SOUTHERN SANDS FARM	Jenkins	4/18/2018	H	96	24673	1.9	94	2	155
GODBEE FARMS	Jenkins	3/15/2018	X	145	16327	1.9	114	2.7	285
COASTAL PLAIN EXP STATION*	Tift	4/19/2018	H	268	25429	1.9	145	2.2	204
DAVID ADDIS	Whitfield	4/23/2018	H	34	19277	1.9	250	1.2	82
SOUTHERN ROSE FARMS	Laurens	4/19/2018	H	87	20758	2	113	2.6	263
J.EVERETT WILLIAMS*	Morgan	4/9/2018	X	1982	27836	2	160	1.8	143
JAMES W MOON	Morgan	4/17/2018	H	124	18397	2.1	153	2	163
MARTIN DAIRY L. L. P.	Hart	4/19/2018	H	338	23633	2.1	166	2.4	191
EBERLY FAMILY FARM*	Burke	3/26/2018	H	914	26746	2.1	181	2.3	207
IRVIN R YODER	Macon	4/5/2018	H	207	24560	2.2	123	2.1	135
UNIV OF GA DAIRY FARM	Clarke	4/3/2018	H	122	19790	2.2	175	2.8	195
BRUCE HARPER	Morgan	4/11/2018	H	136	16833	2.3	161	3.1	329
KEN STEWART	Greene	3/27/2018	H	135	19484	2.3	176	2.7	232
RODGERS' HILLCREST FARMS INC.*	McDuffie	4/24/2018	H	431	31006	2.3	197	2.2	201
SCOTT GLOVER	Hall	4/12/2018	H	214	27174	2.4	141	2.4	156

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UGA extension

Top GA Lows Herds for SCC –TD Average Score – May 2018									
Herd	**County**	**Test Date**	**Br.**	**[1]Cows**	**Milk-Rolling**	**SCC-TD-Average Score**	**SCC-TD-Weight Average**	**SCC-Average Score**	**SCC-Wt.**
BERRY COLLEGE DAIRY	Floyd	5/21/2018	J	34	16433	1.2	45	1.4	51
IRVIN R YODER	Macon	5/9/2018	H	207	24217	1.6	83	2.1	135
DANNY BELL*	Morgan	5/10/2018	H	276	29766	1.6	110	2.1	195
BRENNEMAN FARMS	Macon	4/13/2018	H	50	20823	1.6	303	1.7	154
ALEX MILLICAN	Walker	4/27/2018	H	99	18458	1.8	98	1.9	164
COASTAL PLAIN EXP STATION*	Tift	5/17/2018	H	273	25570	1.8	134	2.2	203
SOUTHERN SANDS FARM	Jenkins	4/18/2018	H	96	24673	1.9	94	2	155
SOUTHERN ROSE FARMS	Laurens	4/19/2018	H	87	20758	2	113	2.6	263
BRUCE HARPER	Morgan	5/8/2018	H	134	16915	2	118	3	311
EBERLY FAMILY FARM*	Burke	4/30/2018	H	850	26758	2	147	2.3	203
J.EVERETT WILLIAMS*	Morgan	5/14/2018	X	1930	27892	2	203	1.9	153
PHIL HARVEY #2*	Jasper	5/24/2018	H	1410	24358	2	206	2.6	235
JAMES W MOON	Morgan	5/15/2018	H	125	18358	2.1	153	2	168
MARTIN DAIRY L. L. P.	Hart	4/19/2018	H	338	23633	2.1	166	2.4	191
WHITEHOUSE FARM	Macon	5/25/2018	H	233	22561	2.1	173	2.9	248
RODGERS' HILLCREST FARMS INC.*	McDuffie	4/24/2018	H	431	31006	2.3	197	2.2	201
DAVE CLARK*	Morgan	5/7/2018	H	1178	31884	2.3	222	2.1	220
JEFF WOOTEN*JEFF	Putnam	5/1/2018	H	273	18309	2.4	161	2.3	172
SCOTT GLOVER	Hall	5/18/2018	H	209	27128	2.4	171	2.5	165
MARK E BRENNEMAN	Macon	4/13/2018	H	152	19405	2.4	183	2.7	257

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