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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.

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Sincerely,

Sha Tao

Sha Tao, Assistant Professor

UGA extension

2019 Commercial Dairy Heifer Project

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Since its inception, the Commercial Dairy Heifer Project has represented a unique opportunity for youth in the state of Georgia to get a taste of the dairy industry. The 2019 show season boasted not only tremendous participation from youth across the state but represented a show that was full of high quality young people with outstanding project heifers.

2019 UGA Dairy Science Club Commercial Dairy Heifer Show

Weighing in on Friday, February 8th, were 184 heifers with 156 young people at the halter. This tremendous group of heifers weighed in on the light end at 250 pounds and on the heavy end at 820 pounds. With weigh in complete, the barn was a bustle with final show day preparation to include washing, clipping, and topline standing!

Many youth also cut out time to make their way to the ring for a practice judging contest. Many thanks to Brooke Helton, a busy vet school student and dairy enthusiast for helping to put this together along with Dr. Graves, professor emeritus at UGA.

Top Five Judging Contest:

	Contestant
1st	Mary Keener
2nd	Alyssa Ashurst
3rd	Noel Pickle
4th	Murray Flowers
5th	Colton Swartz

Following the judging contest, the barn was welcomed to good food and comradery with a dinner sponsored by the Georgia Dairy Youth Foundation and presentations by them along with College of Agricultural and Environmental Sciences Ambassadors.

Bright and early the next morning, Saturday February 9th, Showmanship began in the two rings. Serving as judge in the ring with 4th – 8th grades was Tina Horn. Tina Horn is the State Dairy Extension Specialist in South Carolina. In the neighboring ring, her sister and owner of Her-man Jerseys at Sunny Day Farm, Amanda Lutz served as judge for 9th-12th grades.

First Place Showmanship Winners:

Grade	Showmanship Winner	County
4th	Peyton Clark	Madison Co. 4-H
5th	Luke Huff	Oglethorpe Co. FFA
6th	Maggie Harper	Morgan Co. 4-H
7th	Holt Sapp	Burke Co. 4-H
8th	Emma Turner	Oconee Co. FFA
9th	Bailey Jackson	Houston Co. FFA
10th	Jennifer Brinton	Coweta Co. 4-H
11th	Haley Mungui	Houston Co. FFA
12th	Lawton Harris	Piedmont Academy FFA

The Junior Showmanship Champion (grades 4th-8th) was Luke Huff while the Senior Showmanship Champion (grades 9th-12th) was Bailey Jackson.

Photo: Luke Huff, Junior Showmanship Champion, with judge Tina Horn

Photo: *Bailey Jackson, Senior Showmanship Champion, with judge Amanda Lutz*

The show rolled right into weight classes with the conclusion of showmanship. Judges switched sides and Amanda Lutz judged the lightweight classes (250-510 pounds) while Tina Horn judged the heavyweight classes (514-820 pounds).

First Place Weight Class Winners:

Class	Weight	Heifer #	Showman	County
1	268	8297	Josie Roberson	Coweta Co. 4-H
2	299	8121	Trinity Dismuke	Winder Barrow FFA
3	307	4649	Caitlyn Johnson	Morgan Co. 4-H
4	329	6917	Ashlyn Reddick	Burke Co. FFA
5	377	8696	Christian Page	Oconee Co. 4-H
6	395	8118	Kayla Martinez	Winder Barrow FFA
7	434	8208	Trent Maddox	Jasper Co. FFA
8	451	7634	Bailey Jackson	Houston Co. FFA
9	463	8579	Jessi-Lynn Strickland	Burke Co. FFA
10	504	8660	Chris Pittman	Piedmont Acad. FFA
11	524	8734	Maizy Anna Bentley	Chattooga FFA
12	542	8775	Emma Newberry	Oconee Co. FFA
13	578	8477	Alexis Adams	Rutland FFA
14	582	8209	Trent Maddox	Jasper Co. FFA
15	606	8595	Mary Keener	Gilmer FFA
16	642	8210	Trent Maddox	Jasper Co. FFA
17	702	8294	Sarah Ullom	Coweta Co. 4-H
18	716	8380	Arie Stockton	Houston Co. FFA
19	756	8293	Colton Swartz	Coweta Co. 4-H

In the lightweight ring, Grand Champion was awarded to heifer 8660 exhibited by Chris Pittman while the Reserve Grand Champion was heifer 8118 exhibited by Kayla Martinez.

***Photo**: Chris Pittman with Lightweight Grand Champion heifer and judge Amanda Lutz*

In the heavyweight ring, heifer 8210 exhibited by Trent Maddox was named Grand Champion while heifer 8380 exhibited by Arie Stockton was name Reserve Grand Champion.

***Photo:** Trent Maddox with Heavyweight Grand Champion heifer and judge Tina Horn*

The UGA Dairy Science Club would like to thank all of our financial supporters that contributed to another great year and made this possible for all of these young people. Platinum sponsors of the show were Southern Swiss Dairy, LLC, Premier Select Sires, Georgia Dairy Youth Foundation, and Athens Seed Co. THANK YOU! For more photos of the show, visit the UGA Dairy Science Club Facebook page.

2019 State Commercial Dairy Heifer Show

Heifers for the State Commercial Dairy Heifer Show in Perry, GA weighed in on February 20th with 228 heifers crossing the scales and 198 young people proudly brought them there. Showmanship was a daylong event that began bright and early on February 21st. Serving as judge for both Showmanship on the 21st and weight classes on the 22nd was Mary Creek of Palmyra Farm Ayrshires and Holsteins in Hagerstown, MD.

First Place Showmanship Winners:

Grade	Showmanship Winner	County
4th	Peyton Clark	Madison Co. 4-H
5th	Luke Huff	Oglethorpe Co. FFA
6th	Lane Bridges	Chattooga Co. FFA
7th	Sydney Coble	Burke Co. 4-H
8th	Emma Turner	Oconee Co. FFA
9th	Torrie Reed	Gilmer Co. FFA
10th	Trend Maddox	Jasper Co. FFA
11th	Morgan Patterson	Jasper Co. FFA
12th	Lawton Harris	Piedmont Academy FFA

Taking the top placing 4-H members in 9th-12th grades, the judge named the Master 4-H Showman as Sarah Ullom of Coweta Co. 4-H (9th grade). Following this the judge then evaluated the top placing FFA member from 6th-12th grades to name Morgan Patterson of Jasper Co. FFA (11th grade) as Supreme FFA Showman.

Weight Classes were up the next day with heifers weighing 264-850 pounds.

Division Placings:

Division 1 (264-383 pounds)

Class	Weight	Heifer Number	Showman	County
Champion	364	8646	Eliza Jane Glover	White Co. FFA
Reserve	335	6917	Ashlyn Reddick	Burke Co. FFA

Division 2 (388-475 pounds)

Class	Weight	Heifer Number	Showman	County
Champion	455	8208	Trent Maddox	Jasper Co. FFA
Reserve	412	8296	Caeden Swartz	Coweta Co. 4-H

Division 3 (478-596 pounds)

Class	Weight	Heifer Number	Showman	County
Champion	522	8661	Morgan Patterson	Jasper Co. FFA
Reserve	542	8775	Emma Newberry	Oconee Co. FFA

Division 4 (600-850 pounds)

Class	Weight	Heifer Number	Showman	County
Champion	644	8210	Trent Maddox	Jasper Co. FFA
Reserve	632	8591	Octavia Bushey	Gilmer Co. FFA

The Overall Top Five for the Show:

	Weight	Heifer Number	Showman	County
Champion	522	8661	Morgan Patterson	Jasper Co. FFA
Reserve	455	8208	Trent Maddox	Jasper Co. FFA
3rd	644	8210	Trent Maddox	Jasper Co. FFA
4th	542	8775	Emma Newberry	Oconee Co. FFA
5th	364	8646	Eliza Jane Glover	White Co. FFA

The Overall Top Five County Groups:

	County
Champion	Jasper Co. FFA
Reserve	White Co. FFA
3rd	Rutland FFA
4th	White Co. FFA
5th	Gilmer Co. FFA

Congratulations to everyone that completed another great year as part of the Commercial Dairy Heifer Project!

Dairy cow lameness: Causes, prevention, and management strategies

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Hoof health and lameness management are a critical component of dairy cattle production systems as well as cow comfort and well-being. Despite lame cows appearing similar, lameness can be attributed to multiple causes including infectious bacteria, weight bearing abnormalities, or trauma. The various causes are then managed with different prevention strategies and treatments. Risk factors contributing to lameness include increased standing time, especially on concrete floors, age, body condition score, days in milk, milk production, and foot and leg conformation. Correctly identifying the cause of the lameness, reducing risk factors, and implementing management strategies can help to reduce the negative effects of lameness within a dairy herd.

The prevalence of lameness varies across different farms and housing types, and has been extensively studied. In freestall-housed high producing cattle in Minnesota, a mean herd level prevalence of clinical lameness was found to be 24.6%, but with a range of 3.3% to 57.3%. Because lameness can be a chronic condition in some affected cattle, the identification of new cases of lameness is harder to study and often varies across farms and management styles. Due to the variability of lameness between farms, it is difficult to establish benchmarks to compare data across farms. For this reason, it is more important for producers to maintain detailed records to assess lameness incidence and prevalence within their own herd.

Across the many lesions associated with lameness in dairy cattle, the economic impact is large and apparent to dairy producers, with reported ranges of cost per case between $120 and $215. Prevention of lameness is a large proportion of the capital costs of cattle housing, and many advances have been made in cattle housing that have improved cow comfort and reduced the incidence of non-infectious causes of lameness. Cattle affected by clinical lameness have direct costs of treatment, as well as decreased milk production, decreased odds of pregnancy, and increased odds of culling and death.

Foot or leg lesions that cause pain and abnormal gait are commonly divided into infectious and non-infectious causes. The most common infectious lesions found in confined dairy cattle are digital dermatitis and foot rot, and the most common non-infectious causes are sole ulcers, toe ulcers, thin soles, and white line disease.

Digital dermatitis (hairy heel warts) is a difficult disease to control and is found in both dairy and beef herds. An infectious bacteria is the suspected cause and it persists at low levels in most dairy operations. Another difficulty in controlling digital dermatitis is the use of noxious chemicals to treat sub-clinically affected cattle and control the spread, and the lack of labeled therapies to treat infections. Formaldehyde is a common active ingredient used in footbaths and has proven to be an effective control method. However, formaldehyde can be harmful to farm personnel, and preventive precautions are needed to protect workers handling it. Copper sulfate is an alternative

chemical footbath additive to formaldehyde, but this heavy metal accumulates in soil, which can contaminate cropland that is fertilized with dairy waste.

Another common infectious cause of lameness in dairy cattle is foot rot, which affects the soft tissue structures between the claws by bacteria and causes a sudden lameness, swelling above the hoof, and often has a characteristic odor. This disease is more common in early lactation, with 60% of cases found in cows less than 60 days in milk in one large study. Many injectable antibiotics are efficacious in the treatment of foot rot. Cases that are not detected and treated early enough may progress to infections of the deeper structures of the foot, including the joint spaces. Prevention of foot rot relies on maintaining optimal foot skin health to prevent the fissures in the interdigital skin that allow the pathogens to invade. Formaldehyde footbaths can be effective in controlling foot rot, since they have a drying effect that hardens the hoof and the foot skin, as well as help to clean the foot of accumulated manure that may harbor the pathogenic bacteria.

The rear feet of cattle are subject to greater fluctuations in physical forces than the front feet and are more commonly affected by lesions that are precipitated by physical stress on the hoof anatomy related to bearing weight. Abnormal weight bearing and hoof overgrowth in combination with concrete flooring will often lead to sole thinning, sole ulcers, and hemorrhages.

Cows with sole ulcers are usually clinically lame, and are at risk for infection of deeper hoof structures. Affected cattle have a higher risk of culling, with one study finding that they are 2.7 times more likely to leave the herd than unaffected herd mates. A large study representing more than 50,000 cows found that sole ulcers were found in 13% of clinically lame cattle, and were more common with increasing lactation number. Prevention and control of sole ulcers relies on managing cow comfort and time budgets, as well as maintaining optimal foot conformation with functional claw trimming. Moisture in the barns, such as from soakers or flush systems, has been attributed to increased prevalence of sole ulcers by weakening the sole and increasing the rate of wear on the hoof.

Trauma is another potential cause for non-infectious lameness in cattle. Trauma could be hoof related such as a sole puncture or an injury originating in the leg from a slip, another cow, or damaging contact from an object in the barn. A physical examination should be completed on the animal and the environment assessed for potential nails, slippery areas of flooring, or other potential injury-causing objects.

Prevention methods may be implemented based on the cause and type of lameness. Prevention of infectious causes of lameness is mostly aimed at maintaining foot hygiene and foot skin integrity generally through footbaths. Prevention of non-infectious causes of lameness are centered around improving cow comfort, reducing the amount of time spent standing, correcting abnormal hoof conformation and overgrowth, and reducing the inflammatory insults to the sole. These may be achieved by reducing cow standing time, installing rubber flooring in the parlor holding pen, traveling lanes, and in front of the feed bunk, and routine foot trimmings. Once cattle with clinical lameness have been identified, prompt and proper treatments should be implemented to reduce the pain associated with the lesion, and to improve the speed of recovery.

Because of the cost of lameness, its effect on cow productivity, and the use of treatments with required milk discard, it is imperative that dairies keep accurate records of lameness. However, most dairies do not do an adequate job of recording hoof health information. These records can be used to manage individual or groups of cows, judge the effectiveness of prevention and treatment programs, and prevent violative residues in milk and meat. Many times, the deficiencies occur in

transferring information captured by hoof trimmers to dairy software in a format that can be analyzed. There is now computerized hoof trimming software that allows for chute-side information capture that can also be imported into dairy management software. Unfortunately, these programs require initial startup costs as well as buy in from both the trimmer and the dairy management team, and are underutilized across the industry.

Lameness in dairy cattle can be a costly problem and detrimental to production. Due on the various causes of lameness and implications of the conditions, it is imperative to maintain detailed records of events and to implemented prevention strategies to manage lameness within the herd. Utilizing the services of a veterinarian and professional hoof trimmer can be valuable additions to a lameness management strategy implemented within a dairy operation. If you would like to visit with one of our veterinarians regarding a hoof health and lameness program, we would be glad to explore the options and design a plan to best fit your operation and goals.

Can visual assessment of heifer secretions be used to identify infected quarters?

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Introduction

Mastitis in pregnant heifers can lead to impaired mammary gland development, which ultimately may result in decreased milk production (in the first and subsequent lactations) and premature culling (Bludau et al., 2014). In addition, heifers may carry pre-calving infections into their first lactation and pose a risk to spread pathogens to other animals. Thus, it is clear that identifying and treating infected heifers should be a goal to reduce mammary damage prior to the first lactation. However, heifer mastitis identification can be labor intensive and costly. An effective heifer mastitis identification protocol would require bacterial culture of each sample, which can be quite costly even with on-farm culture. Therefore, determining an effective method to identify infected quarters for treatment that would be less costly than quarter sample culturing is imperative. Moreover, implementing a strategy to reduce or prevent "blanket" usage of antibiotic in infected and uninfected alike in heifers is warranted. Note that any antibiotic usage in heifers is under the purview of a valid client/patient relationship (VCPR) and only used when deemed absolutely necessary.

Recent data from Dr. Nickerson and the UGA Mastitis Lab suggested that visual assessment of heifer secretions can be used to identify infected quarters. Observations made by the team led to the establishment of a scoring system for heifer secretions that could then be used for making antibiotic treatment decisions. The scoring system was as follows: scores of 1 were assigned to secretions that were thick and honey-like, 2 were sluggish but movable when swirled, and 3 were thin and watery. Their studies suggested that scores of 3 were associated with infection, whereas scores of 1 and 2 were generally uninfected. The purpose of the current study was built upon these initial findings. The goal of the study was to assess the accuracy of utilization of heifer secretion scores to treat infected quarters in pre-calving heifers.

Methods

A total of 15 heifers were sampled with 59 quarters included. A quarter was removed from the study results as it was not possible to collect or score the secretion. Pregnant Holstein and Jersey heifers were enrolled from the UGA Teaching Dairy. On the day of sampling, each teat was sanitized with a cotton ball soaked in 70% alcohol. Secretions were scored as described above during collection. Secretion scores of either 1 or 2 were presumed uninfected and were not treated. Secretion scores of 3 were presumed infected and treated with 1 intramammary tube of SPECTRAMAST®DC and then sealed with ORBESEAL®. After secretion collection, each teat was dipped or sprayed with a germicidal iodine solution.

All samples were plated the same day they were collected. When possible, somatic cell counts were recorded. Samples were plated on standard blood agar plates for identification of any

bacterial pathogens. In general, the colonies were first preliminarily identified as either *Staphylococcus* spp. or *Streptococcus* spp. by visual examination of the colony. In general, *Staphylococcus* colonies had a creamy appearance (ranging from white to a pale golden yellow) with a defined edge when viewed with a stereoscope, while *Streptococcus* colonies were generally smaller and white with less defined edges, presenting a "ghost-like" appearance. Further diagnostic tests were conducted to confirm *Staph. aureus (SA)*, coagulase-negative *Staph.*, coagulase-positive *Staph. (but not SA)*, or environmental *Strep*.

Prevalence of infection and distribution of pathogens detected was calculated. The following percentages for assessing the accuracy of using heifer secretions to identify infection were calculated and tested for statistical significance.

$$\frac{\text{quarters presumed infected and determined to be truly infected}}{\text{total infected quarters}} * 100\%$$

Results

Infection rate and pathogens

Of the 15 heifers sampled, 73.3% of heifers and 45.76% of quarters were infected. Results showed that 1.8 quarters per heifer were infected. When considering only the quarters infected, the distribution of pathogens is displayed in the Figure 1. The heifer pathogens found are also common cow pathogens.

The pathogens are briefly discussed below:

- ◊ *Staph. hyicus* is a teat skin pathogen, like *Staph. chromogenes and Staph. capitis* (although *Staph. capitis* is usually associated with goats). In heifers, these teat skin pathogens are difficult to prevent, whereas in cows prevention is centered around germicidal teat dips.
- ◊ As expected, the rate of *Staph. aureus* was high among infected quarters, but not as high as reported in other herds (Nickerson, 2009). Since *Staph. aureus* is predominately spread by blood-sucking horn flies, fly control most likely aided in keeping the *Staph. aureus* infection rate lower than past studies.

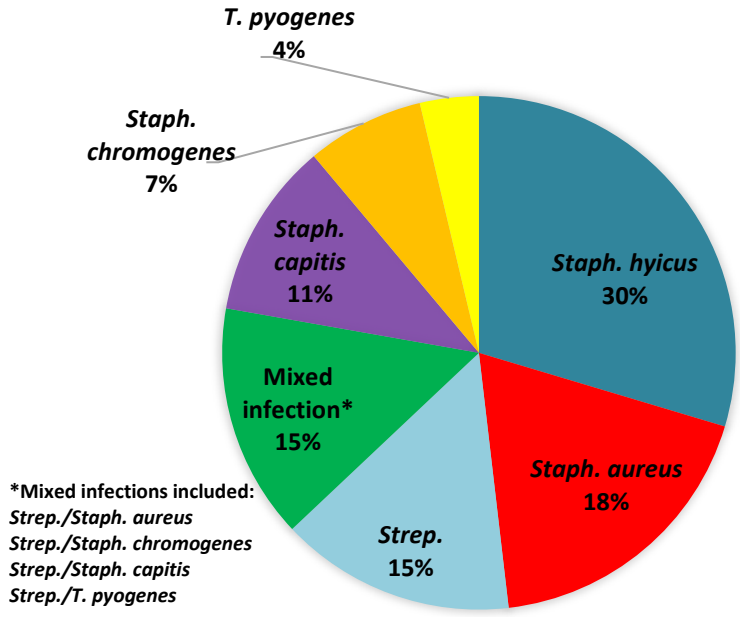

Figure 1: *Distribution of Pathogens Among Infected Quarters*

- ◊ The rates of *Streptococcus* mastitis in heifers has increased compared to recent years, which is consistent with challenges in lactating herds. It has been suggested that flies (though not the horn fly) may also be a culprit in spreading *Strep.* infections (Chirico et al., 1997).

◊ Mixed infections are more common in heifers than in lactating cows. It would stand to reason that the presence of 2 bacteria contributes to the enhanced mammary tissue damage in developing heifers compared to 1 bacteria, but there is little concrete data to substantiate that claim.

◊ *Trueparella* pyogenes is the common "summer mastitis" pathogen. This pathogen can be properly managed with consistent fly control methods since *T. pyogenes* is generally spread by biting flies.

Accuracy of assessing heifer secretions for infection

A total of 30 quarters were presumed infected. After culturing, data indicated that 86.67% of presumed infected quarters were verified to be truly be infected meaning that we were able to accurately identify about 87% of infections in heifers. However, this means that 13.33% of the quarters we treated were uninfected quarters. Treating quarters which are uninfected is certainly a financial waste given the additional labor and expenses associated with treatment and clearly defeats the purpose of reducing antibiotic usage for some operations. Ultimately, this scoring system may prove useful in herds that currently utilize heifer intramammary antibiotic therapy, if the accuracy of identifying infections can be improved beyond 87%.

While we were focused on assessing presumptively infected quarters in this first study, we did find that 1 quarter was presumed uninfected and turned out to be truly infected. Of course, it is a consideration that even in very small numbers, there is the likelihood that infections can be missed. It is unclear which is more detrimental to the overall profitably and sustainability of the operation; missing very few infected quarters, or treating quarters that otherwise do not need treatment. Economic analysis can be done to assess this as there are currently no other studies that have explored presumptive identification of heifer mastitis by assessing heifer secretions.

Final thoughts

Just like in lactating animals, the goal for heifer mastitis is prevention utilizing nonantibiotic strategies. Though prevention of heifer mastitis is difficult, there are some considerations and programs to implement which will reduce the risk of heifer mastitis.

1. Implement fly control for heifers (from birth to calving). Options include: sprays, pour-ons, insecticide-impregnated tags, feed-through growth regulators, and fly predators. Some of these options may be unrealistic (e.g. sprays and pour-ons require labor-intensive application, feed-through growth regulators may be too costly). Nonetheless, consider a method to reduce fly populations, especially during the warm, wet summer months. Continually evaluate method to prevent rise of resistant fly populations.
2. Maintain a clean environment where heifers are housed to reduce exposure to mastitis pathogens, especially environmental bacteria
3. Maintain proper nutrition, include vitamins and minerals, for proper immune function.
4. Consider vaccination against Gram-negative pathogens and *Staph. aureus*. Though the efficacy of *Staph. aureus* vaccination (Lysigin®) is poor in cows, reports suggest that the greatest efficacy of this vaccination may be in first calf heifers (Giraudo et al., 1997; Tenhagen et al., 2001).
5. Teat sealants can be considered during mid to late gestation but should be used with caution and with substantial training. Sanitize teat ends thoroughly with 70% isopropyl alcohol and infuse sealant using the partial insertion method. Note: utilizing a teat seal will not cure existing infections but can be effective in preventing new infections.

If you identify a heifer mastitis problem in your herd, either by identification of clinical mastitis in heifers prior to calving or as a result of recording increased early lactation mastitis in first calf heifers, you may want to consider antibiotic therapy in pre-calving heifers. This consideration should be discussed with your herd veterinarian and as part of a VCPR. The causative pathogens should be identified utilizing bacterial culturing and appropriate antibiotics should be chosen. Milk should always be tested for any antibiotic residues.

For any questions regarding these studies, feel free to contact Dr. Valerie Ryman.

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UGA extension

New insights about the diagnosis of fatty liver in dairy cows

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Fatty liver is a typical metabolic disease of dairy cattle, which generates annual losses for $ 60 million to the US dairy industry. It is characterized by an excessive accumulation of fat in the liver, which determines that the functionality of this organ is negatively affected due to the structural damage of their cells. In a normal liver, the fat content does not exceed 2%, although when the accumulation process is severe it can be more than 20% of the total content of the liver, that is, 10 times more than a healthy liver.

Before parturition, the dairy cow begins to decrease her dry matter intake. The day of calving even does not consume feed; it only starts to raise after parturition. In fact, the cow can reach her maximum feed intake between 80 and 120 days in milk, a couple of weeks after her peak of lactation (35-60 days in multiparous cows, 90-120 days in primiparous cows). So, unfortunately, the increase in feed intake is much slower than the increase in milk yield. As a result, the cow must mobilize fats from her body reserves (subcutaneous fat and abdominal fat) in order to meet the energy requirements for the milk synthesis.

Thus, the mobilization of fat in a postpartum cow is a normal process, which is evidenced by measuring in the blood the non-esterified fatty acids (NEFA). They should be < 0.3 mEq / L before parturition and 0.7-0.9 mEq / L at the time of calving and the first 3 days of lactation. The problem is that when this amount of NEFA is greater than the mentioned concentrations, it can begin to accumulate pathologically in the liver. When blood passes through the liver, NEFA are captured by hepatic cells and reassembled into larger molecules called triglycerides. They are so named because they are 3 fatty acids (NEFA) that bind to a molecule of glycerol. These triglycerides must be exported to the blood again in the form of very low density lipoproteins (VLDL). However, if the amount of NEFA captured by the liver is excessive, and therefore the amount of triglycerides deposited is higher than normal, there will be a slow accumulation in time, because VLDL export mechanism is a slower process in dairy cows. It should be noted that when triglycerides begin to exceed 5% of the live weight of the liver, the damage to this organ begins to become more evident and irreversible. In fact, this could end up producing the death of the cow. An accumulation of fat can occur over 10% -15% in a period of 48 to 72 hours. All this, of course, will generate disastrous consequences for the cow.

Therefore, a key point is to identify the risk factors that lead to an excessive increase of NEFA in the blood and thus develop a preventive program for fatty liver disease. Unfortunately, when the liver is saturated with fat -more than 10 % of the liver-, the treatments are ineffective and the cow begins to develop other related disorders, such as ketosis, displacement of abomasum, mastitis and metritis, among others, which complicate the normal functioning of the body.

Risk factors for excessive fat mobilization and fatty liver

1-Obesity

Obesity, as in humans, is a serious problem in the dairy cow, especially if she delivers with an excessive body condition (≥ 3.75; scale 1-5). An obese cow at parturition consumes much less feed than a normal one, therefore at the time of the beginning of lactation it mobilizes much more fatty acids, reaching levels of NEFA in blood above 0.9 mEq/L. This excess may saturate the liver. Therefore, it is important to dry off the cow with moderate body condition (2.75 to 3.0) and avoid overfeeding towards the end of lactation. This is also true for heifers before first calving, especially in the initial stages of growth. Heifers should not gain excessive weight but achieve moderate gains of between 0.7 and 0.8 kg/d (1.54 – 1.76 lb/d), in order to reach the breeding weight at 13 to 15 months of age and a body condition score of 3.0 to 3.25. During pregnancy, the feeding should also be moderated, since the hormones of pregnancy make the heifer gain weight and condition much faster. On the other hand, an obese heifer at birth will be more prone to develop dystocia and secondary diseases, which will further aggravate their postpartum period.

2-Diseases:

Any disease that is developed around parturition (milk fever, metritis, mastitis) will decrease feed intake and lead to the cow mobilize more fat than normal. Therefore, a strategic plan for the early diagnosis of peripartum diseases should allow treating the cows immediately. Much more important is the prevention of these diseases through balanced diets and efficient management, which includes providing an adequate cow-comfort. This will help strengthen the immune system, which becomes depressed naturally around parturition.

Unbalanced diets, with a high content of starch and energy for example, can lead to the development of obesity during the end of lactation. Any sudden change in diet will lead the cow to develop digestive disorders such as ruminal acidosis or hemorrhagic enteritis. This, in turn, will trigger lack of appetite and severe fat mobilization.

3-Stress

Any stress, such as excessive environmental heat and humidity, lack of shade and comfort, excess of mud, overcrowding and lack of animal welfare, will lead to triggered hormonal mechanisms that cause more fat mobilization than normal.

Unfortunately, fatty liver can only be diagnosed through liver biopsies, from which fat is extracted. From this, a histopathological evaluation can be carried out, which determines the presence of vacuoles inside the liver cells. These tell us the degree of fat infiltration. Unfortunately, biopsy is an invasive method that can leave potential secondary effects such as hemorrhages, adhesions and peritonitis.

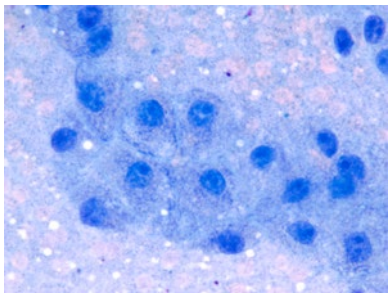
Recently, we studied the use of fine needle aspiration to carry out a cytological evaluation of the liver sample, a method that is similar to biopsy but less invasive. The important thing, is that the aspiration uses a fine needle, which implies that it is a much less risky method. It is also a procedure that can be carried out in the same field by the veterinarian. We published this study at the Journal of Dairy Science, 101(5):4483-4490; 2018.

However, the development of some molecular technique that helps determine some biological marker released by the liver in its initial stages of accumulation of fat (2 to 5% of fat) would be a much more efficient and non-invasive technique. It could also help the early diagnosis of the disease.

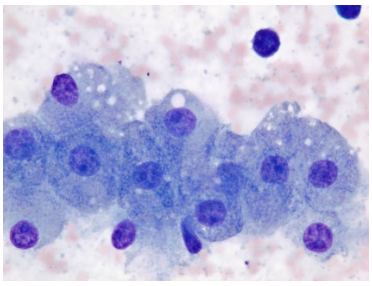
At the University of Georgia, we are carrying out some molecular studies that allow us to find some biological marker of acceptable sensitivity and specificity for the diagnosis of fatty liver. We hope in a future article to share with you some preliminary results of these studies.

In conclusion, preventive strategies for fatty liver have been the use of feed additives such as protected choline, methionine supplementation, and the use of gluconeogenics, yeasts and prebiotics, among others. However, the most important approach is to carry out an efficient herd management. Avoiding obesity at calving and stress during the transition period, providing a balanced diet and adequate comfort for the cow are essential for the prevention of fatty liver and associated diseases in dairy cattle.

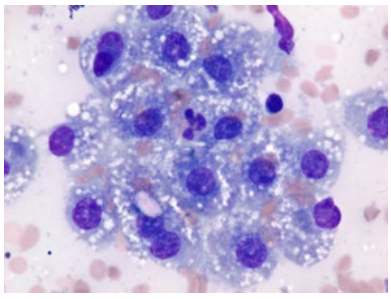
Scores for Fine Needle Aspiration cytology. Scores 0 and 1 are normal. Scores 2, 3, 4 and 5 are abnormal. Look at the score 5 the amount of vacuoles (white circles) present in the hepatic cells.



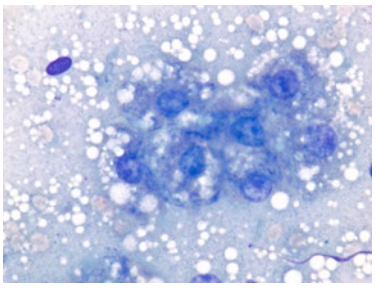
Score 0



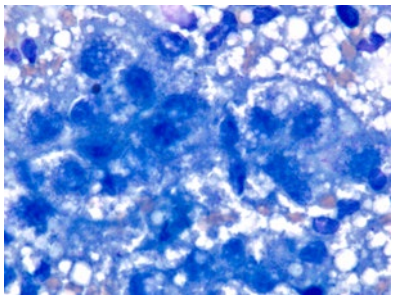
Score 1



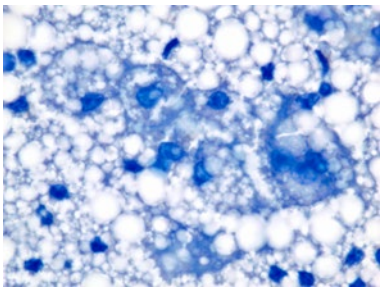
Score 2



Score 3



Score 4



Score 5

Figure. *Scores for Fine Needle Aspiration cytology. (Source: Melendez et al., Journal of Dairy Science, 101(5):4483-4490; 2018)*

Update on feeding whole cottonseed to lactating dairy cows

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Whole cottonseed (WCS) is a unique feedstuff providing protein, energy from its oil, and effective fiber that stimulates cud chewing. Because of this, WCS have been successfully fed to lactating dairy cattle for years. However, in recent years some have questioned its value for high producing dairy cows. The primary reason cited is the observation of whole, undigested seed in the manure and seed around the edge of the lagoon.

Several years ago, researchers at the University of Wisconsin conducted a trial to evaluate any differences in feeding fuzzy or delinted WCS to lactating dairy cows. Both sources of WCS were fed at 13% of the dietary DM. To determine if there were any differences in the amount of WCS passing through the digestive tract intake, they collected feces and measured the seed that were not digested. The amount of undigested seed measure ranged from 1.2 to 1.9% of WCS consumed for fuzzy WCS and 2.0 to 3.1% for mechanically delinted WCS. The amounts were higher for multiparous cows that consumed more DM than primiparous cows. Based on the average intake for both age groups of cows, this averaged 0.11 and 0.19 lb. of intact fuzzy and delinted whole cottonseed, respectively, recovered in the manure. Assuming there are an average of 5,000 seed in one pound of WCS as fed, this would equal approximately 550 and 950 of intact fuzzy and delinted WCS, respectively, passing through the cow undigested each day. The average DM digestibility of the diet was 64%, so there would be approximately 32 to 54 seed/lb. DM of feces.

Depending on the number of cows in the herd, there would result in several thousand undigested WCS that make it to the lagoon each day. These intact seed would likely float when they reach the lagoon and some would eventually wash out on the edge. This is in contract with other feed ingredients (ground corn, soybean hulls, citrus pulp, distiller's grains, brewer's grains, etc.) commonly fed to dairy cows that are identifiable in the manure and would not float in the lagoon compared with WCS.

Compared to other common feedstuffs, WCS have been economically priced. However, producers should evaluate the value of WCS based on their own circumstances to determine if they are a good economical choice for their situation. One way to adjust the cost of the undigested seed would be to add 1.5% to the expected total shrink measured on your farm.

This past year cotton harvest was delayed in many areas because of the continuous rain. The warm, wet conditions for the cotton harvested late increase the potential for WCS with high concentrations of fatty acid (FFA). We conducted several trials to examine the effects of feeding WCS high FFA concentrations compared with normal WCS. Feeding WCS with up to 18% FFA fed at 12.5% of the diet DM did not alter nutrient digestibility compared with the normal WCS (10.7% FFA) when fed to steers. However, feeding WCS with high FFA (22-24% FFA) at 14% of the dietary DM (6.9 lb of WCS/day) reduced milk fat percentage and yield, but did not affect DM intake or milk yield compared with the control (Trial 1). In a second trial (Trial 2), we fed WCS at 8.5% of the dietary DM (5.6 lb/d of WCS as fed) that contained 10.7 (Control), 23.1 and 35.5% FFA. Like the first trial, no differences were observed in intake or milk yield, but milk fat percentage and yield was reduced for cows consuming WCS with 35.5% FFA. The fat content of the diets fed in both the lactating trials was slightly more than 6% of DM, but WCS provided the

majority of fat in Trial 1 whereas WCS only provided approximately 25% of the total dietary fat. These results suggest that when feeding WCS with high FFA, a greater amount of the oil escapes biohydrogenation and is converted to CLA which decreases de novo milk fat synthesis by the mammary gland causing the reduction in milk fat yield. Producers should ask for information on the FFA content of WCS when pricing. If the seed contains greater than 15% FFA, cows will maintain milk production but the milk will have reduced milk fat percentage. To avoid the reduction in milk fat percentage, the amount of high FFA WCS should be reduced and supplemental ruminally protected fats fed if additional energy is required.

Feeding frequency on preweaning calves during summer

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In the summer time, calves have elevated body temperatures suggesting they are experiencing heat stress. Calves exposed to temperatures above 68 °F begin panting and sweating to get rid of the extra heat reducing the amount of energy available for growth. Heat stress also lowers feed intake which further limits the energy available for growth which may potentially reduce average daily gain and weaning weight further.

Providing shade, supplemental ventilation using fans, adequately separating hutches, providing clean bedding, and providing enough feed and water are some management practices that can be implemented to reduce the detrimental effects of heat stress. Also, it is reasonable to assume that increasing the amount of milk fed would help to improve growth during the summer as this would supply additional energy and nutrients. However, feeding large amounts of milk during summer can cause digestive problems such as abomasum bloating. One solution to lessen such problem was hypothesized to be increasing the number of milk replacer feedings.

We conducted a study at the UGA-Tifton Research Dairy in the summer of 2018. Calves were fed 1.5 lbs/day or1.75 lbs/day of a 26% protein, 17% fat milk replacer (MR) divided into 2 times (2X) or 3X feedings. Calves were housed in polyethylene hutches in an open area without any supplemental shade. The average temperature-humidity index (THI) was 76.6 outside and 77.7 inside the hutches during the experiment. The THI peaked at 84 inside the hutches on the hottest hours of the day. Results of the trial showed that feeding the calves 3X lowered respiration rate by 10-18% from 3 to 6 wk of age compared with feeding 2 times daily (2X). Also, feeding 3X tended to reduce calf rectal temperature compared with 2X when fed 1.5 lbs/day only (102.7 vs. 103.0 °F). Calves fed 3X consumed more MR than those fed 2X. The calves fed 1.5 lb/d MR 3X also consumed more starter after weaning than those fed 2X. Increasing the number of feedings to 3X increased total dry matter intake. However, no differences were observed in growth among the treatments, perhaps due to the intense heat load that calves were exposed to.

These results indicate that increasing the number of feedings from 2 to 3 during heat stress can reduce the calf's heat load and increase feed intake but does not improve growth. This suggest that some type of environmental improvement is necessary to realize the benefits of improved milk replacer feeding management when calves are raised in polyethylene hutches. Previous research in Ohio reported improvements from providing fans when calves were raised in a barn. However, more research is needed to confirm whether this could be a feasible, and economical solution.

Important Dates

2019-2020

North American Intercollegiate Dairy Challenge

- March 28-30, 2019
- Tifton, GA
- http://www.dairychallenge.org/national_contest.php

56th Annual UGA Spring Dairy Show

- April 6, 2019
- UGA Livestock Instructional Arena, Athens, GA
- https://site.extension.uga.edu/dairy/files/2019/02/UGASpringDairyShow2019InfoEntry.pdf

Corn Silage and Forage Field day

- June 20, 2019, beginning at 8 am.
- UGA Tifton Campus Conference Center
- Featured speaker: Dr. Limin Kung, University of Delaware, will discuss the best management practices for making silage.

Top GA DHIA By Test Day Milk Production – December, 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	12/2/2018	1176	90	96.3	4.3	3.62	31063	1283
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	12/17/2018	447	88	93.6	4.3	3.41	31765	1176
DANNY BELL*	Morgan	H	12/7/2018	290	90	86.8	4.1	3.22	29031	1122
SCHAAPMAN HOLSTEINS*	Wilcox	H	12/31/2018	766	90	86.8	3.3	2.51	26807	963
DOUG CHAMBERS	Jones	H	12/26/2018	422	87	85.9	3.5	2.62	25131	870
J.EVERETT WILLIAMS*	Morgan	X	12/10/2018	1944	88	84.5	4.4	3.27	27495	1192
A & J DAIRY*	Wilkes	H	12/22/2018	443	91	82.9			28234	
SCOTT GLOVER	Hall	H	11/19/2018	187	89	81.9	4.3	3.04	26389	1000
TROY YODER	Macon	H	11/29/2018	295	88	81.5	4.2	2.83	24946	1011
IRVIN R YODER	Macon	H	11/27/2018	238	88	77.9	3.8	2.54	23475	903
EBERLY FAMILY FARM	Burke	H	12/17/2018	1046	90	77.2	3.8	2.59	25777	932
R & D DAIRY	Lamar	H	11/29/2018	289	92	74.9	4.5	3.11	24528	986
PHIL HARVEY #2*	Putnam	H	11/15/2018	1462	88	74.7	4	2.72	24475	910
OCMULGEE DAIRY	Houston	H	12/21/2018	356	87	72.9	3.7	2.27	21444	774
COASTAL PLAIN EXP STATION*	Tift	H	12/19/2018	287	89	72.7	3.9	2.58	24858	900
MARTIN DAIRY L. L. P.	Hart	H	11/21/2018	324	89	70.9	4.2	2.59	23591	931
BRENNEMAN FARMS	Macon	H	11/30/2018	45	85	70.4	3.5	1.79	19830	744
BOBBY JOHNSON	Grady	X	12/27/2018	573	91	70.2			20207	
WILLIAMS DAIRY	Taliaferro	H	12/13/2018	128	90	69.7	4.1	2.49	22053	819
JERRY SWAFFORD	Putnam	X	12/20/2018	113	83	65.4	3.7	2.17	17351	653

[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).

UGA extension

Top GA DHIA By Test Day Fat Production – December 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	12/2/2018	1176	90	96.3	4.3	3.62	31063	1283
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	12/17/2018	447	88	93.6	4.3	3.41	31765	1176
J.EVERETT WILLIAMS*	Morgan	X	12/10/2018	1944	88	84.5	4.4	3.27	27495	1192
DANNY BELL*	Morgan	H	12/7/2018	290	90	86.8	4.1	3.22	29031	1122
R & D DAIRY	Lamar	H	11/29/2018	289	92	74.9	4.5	3.11	24528	986
SCOTT GLOVER	Hall	H	11/19/2018	187	89	81.9	4.3	3.04	26389	1000
TROY YODER	Macon	H	11/29/2018	295	88	81.5	4.2	2.83	24946	1011
PHIL HARVEY #2*	Putnam	H	11/15/2018	1462	88	74.7	4	2.72	24475	910
DOUG CHAMBERS	Jones	H	12/26/2018	422	87	85.9	3.5	2.62	25131	870
MARTIN DAIRY L. L. P.	Hart	H	11/21/2018	324	89	70.9	4.2	2.59	23591	931
EBERLY FAMILY FARM	Burke	H	12/17/2018	1046	90	77.2	3.8	2.59	25777	932
COASTAL PLAIN EXP STATION*	Tift	H	12/19/2018	287	89	72.7	3.9	2.58	24858	900
IRVIN R YODER	Macon	H	11/27/2018	238	88	77.9	3.8	2.54	23475	903
SCHAAPMAN HOLSTEINS*	Wilcox	H	12/31/2018	766	90	86.8	3.3	2.51	26807	963
WILLIAMS DAIRY	Taliaferro	H	12/13/2018	128	90	69.7	4.1	2.49	22053	819
JOHN WESTSTEYN*	Bacon	X	12/6/2018	1122	89	62.4	4.3	2.31	19770	794
BERRY COLLEGE DAIRY	Floyd	J	12/20/2018	34	81	52.8	5.3	2.3	16779	812
OCMULGEE DAIRY	Houston	H	12/21/2018	356	87	72.9	3.7	2.27	21444	774
KIRK BUTCHER	Coweta	H	12/1/2018	374	89	59.6	4.2	2.19	19988	722
SOUTHERN ROSE FARMS	Laurens	H	12/21/2018	111	88	64.9	4.1	2.18	20900	839

[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 – January 2019										
					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	12/31/2018	1189	90	97.4	4.2	3.67	30992	1278
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	12/17/2018	447	88	93.6	4.3	3.41	31765	1176
TROY YODER	Macon	H	1/29/2019	304	88	89.4	4.2	3.2	25204	1020
SCHAAPMAN HOLSTEINS*	Wilcox	H	12/31/2018	766	90	86.8	3.3	2.51	26807	963
A & J DAIRY*	Wilkes	H	1/19/2019	427	91	85.3			28202	
DANNY BELL*	Morgan	H	1/3/2019	289	90	85.2	3.9	3.19	28770	1118
DOUG CHAMBERS	Jones	H	1/29/2019	438	88	83.8	3.4	2.52	25418	879
J.EVERETT WILLIAMS*	Morgan	X	1/7/2019	1963	88	83.3	4.4	3.18	27451	1195
EBERLY FAMILY FARM	Burke	H	1/10/2019	1041	90	80.5	3.8	2.72	25639	927
IRVIN R YODER	Macon	H	1/17/2019	247	89	80.3	3.8	2.76	23823	910
MARTIN DAIRY L. L. P.	Hart	H	1/23/2019	323	89	76	4.2	2.96	23441	933
SOUTHERN SANDS FARM	Burke	H	1/2/2019	93	91	75.8	3.7	2.62	24264	885
COASTAL PLAIN EXP STATION*	Tift	H	1/16/2019	282	90	75	3.9	2.64	24729	898
BRENNEMAN FARMS	Macon	H	1/7/2019	46	83	74.5	3.5	2.29	19448	724
TWIN OAKS FARM	Jefferson	H	1/16/2019	76	91	74.5	4.2	2.8	22726	868
OCMULGEE DAIRY	Houston	H	1/18/2019	349	87	74.3	3.8	2.45	21486	777
BOBBY JOHNSON	Grady	X	1/28/2019	555	91	72.3			20366	
WHITEHOUSE FARM	Macon	H	1/18/2019	249	90	70.4	3.8	2.33	22666	838
VISSCHER DAIRY*	Jefferson	H	1/17/2019	1006	88	69.6	3.9	2.35	23147	802
WILLIAMS DAIRY	Taliaferro	H	1/9/2019	134	90	68.1	4.1	2.56	22005	825

[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).***

UGA extension

Top GA DHIA By Test Day Fat Production - January 2019										
					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	12/31/2018	1189	90	97.4	4.2	3.67	30992	1278
RODGERS' HILLCREST FARMS INC.*	McDuffie	H	12/17/2018	447	88	93.6	4.3	3.41	31765	1176
TROY YODER	Macon	H	1/29/2019	304	88	89.4	4.2	3.2	25204	1020
DANNY BELL*	Morgan	H	1/3/2019	289	90	85.2	3.9	3.19	28770	1118
J.EVERETT WILLIAMS*	Morgan	X	1/7/2019	1963	88	83.3	4.4	3.18	27451	1195
MARTIN DAIRY L. L. P.	Hart	H	1/23/2019	323	89	76	4.2	2.96	23441	933
TWIN OAKS FARM	Jefferson	H	1/16/2019	76	91	74.5	4.2	2.8	22726	868
IRVIN R YODER	Macon	H	1/17/2019	247	89	80.3	3.8	2.76	23823	910
BERRY COLLEGE DAIRY	Floyd	J	1/17/2019	34	82	59.9	5.2	2.74	16942	831
EBERLY FAMILY FARM	Burke	H	1/10/2019	1041	90	80.5	3.8	2.72	25639	927
COASTAL PLAIN EXP STATION*	Tift	H	1/16/2019	282	90	75	3.9	2.64	24729	898
SOUTHERN SANDS FARM	Burke	H	1/2/2019	93	91	75.8	3.7	2.62	24264	885
WILLIAMS DAIRY	Taliaferro	H	1/9/2019	134	90	68.1	4.1	2.56	22005	825
DOUG CHAMBERS	Jones	H	1/29/2019	438	88	83.8	3.4	2.52	25418	879
SCHAAPMAN HOLSTEINS*	Wilcox	H	12/31/2018	766	90	86.8	3.3	2.51	26807	963
OCMULGEE DAIRY	Houston	H	1/18/2019	349	87	74.3	3.8	2.45	21486	777
BOB MOORE	Putnam	H	12/30/2018	205	88	67.4	4.2	2.39	19826	787
VISSCHER DAIRY*	Jefferson	H	1/17/2019	1006	88	69.6	3.9	2.35	23147	802
WHITEHOUSE FARM	Macon	H	1/18/2019	249	90	70.4	3.8	2.33	22666	838
WALNUT BRANCH FARM	Washington	H	1/10/2019	375	86	61.1	4.2	2.32	18257	679

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UGA extension

Top GA DHIA By Test Day Milk Production – February 2019										
					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	1/30/2019	448	88	96.1	4.6	3.78	31624	1193
DAVE CLARK*	Morgan	H	2/4/2019	1162	90	96	4.3	3.72	30912	1271
SCHAAPMAN HOLSTEINS*	Wilcox	H	2/5/2019	752	90	90.4	3.3	2.79	26774	956
A & J DAIRY*	Wilkes	H	2/22/2019	423	91	90.1			28171	
TROY YODER	Macon	H	1/29/2019	304	88	89.4	3.7	2.87	25204	1013
DANNY BELL*	Morgan	H	2/7/2019	292	91	86.8	4	3.19	28569	1114
J.EVERETT WILLIAMS*	Morgan	X	2/11/2019	2019	88	86.6	4.5	3.38	27386	1197
DOUG CHAMBERS	Jones	H	2/26/2019	427	88	83.8	3.5	2.62	25652	884
IRVIN R YODER	Macon	H	1/17/2019	247	89	80.3	3.8	2.76	23823	910
SCOTT GLOVER	Hall	H	1/25/2019	179	89	78.3	4.3	3.09	26177	1007
EBERLY FAMILY FARM	Burke	H	2/18/2019	1023	90	78	4	2.81	25520	930
PHIL HARVEY #2	Putnam	H	1/31/2019	1481	88	77.4	4	2.78	24656	932
SOUTHERN SANDS FARM	Burke	H	2/19/2019	92	91	76.5	3.6	2.62	24223	891
MARTIN DAIRY L. L. P.	Hart	H	1/23/2019	323	89	76	4.2	2.96	23441	933
VISSCHER DAIRY LLC*	Jefferson	H	2/25/2019	1025	88	75.8	3.7	2.55	22824	803
OCMULGEE DAIRY	Houston	H	2/21/2019	343	87	75.1	3.8	2.55	21624	787
BRENNEMAN FARMS	Macon	H	2/8/2019	49	82	75	3.2	2.12	19284	708
R & D DAIRY	Lamar	H	2/21/2019	301	92	74.9	3.9	2.79	24523	990
TWIN OAKS FARM	Jefferson	H	1/16/2019	76	91	74.5	4.2	2.8	22726	868
COASTAL PLAIN EXP STATION*	Tift	H	2/19/2019	265	90	74.1	3.8	2.62	24541	896

[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).***

UGA extension

Top GA DHIA By Test Day Fat Production – February 2019										
					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	1/30/2019	448	88	96.1	4.6	3.78	31624	1193
DAVE CLARK*	Morgan	H	2/4/2019	1162	90	96	4.3	3.72	30912	1271
J.EVERETT WILLIAMS*	Morgan	X	2/11/2019	2019	88	86.6	4.5	3.38	27386	1197
DANNY BELL*	Morgan	H	2/7/2019	292	91	86.8	4	3.19	28569	1114
SCOTT GLOVER	Hall	H	1/25/2019	179	89	78.3	4.3	3.09	26177	1007
BERRY COLLEGE DAIRY	Floyd	J	2/22/2019	31	83	62.7	5.3	2.99	17145	852
MARTIN DAIRY L. L. P.	Hart	H	1/23/2019	323	89	76	4.2	2.96	23441	933
TROY YODER	Macon	H	1/29/2019	304	88	89.4	3.7	2.87	25204	1013
EBERLY FAMILY FARM	Burke	H	2/18/2019	1023	90	78	4	2.81	25520	930
TWIN OAKS FARM	Jefferson	H	1/16/2019	76	91	74.5	4.2	2.8	22726	868
SCHAAPMAN HOLSTEINS*	Wilcox	H	2/5/2019	752	90	90.4	3.3	2.79	26774	956
R & D DAIRY	Lamar	H	2/21/2019	301	92	74.9	3.9	2.79	24523	990
PHIL HARVEY #2	Putnam	H	1/31/2019	1481	88	77.4	4	2.78	24656	932
IRVIN R YODER	Macon	H	1/17/2019	247	89	80.3	3.8	2.76	23823	910
SOUTHERN SANDS FARM	Burke	H	2/19/2019	92	91	76.5	3.6	2.62	24223	891
COASTAL PLAIN EXP STATION*	Tift	H	2/19/2019	265	90	74.1	3.8	2.62	24541	896
DOUG CHAMBERS	Jones	H	2/26/2019	427	88	83.8	3.5	2.62	25652	884
BOB MOORE	Putnam	H	2/5/2019	203	88	68.2	4	2.59	19803	787
JOHN WESTSTEYN*	Bacon	X	2/8/2019	1225	89	67.7	4.1	2.59	19414	788
OCMULGEE DAIRY	Houston	H	2/21/2019	343	87	75.1	3.8	2.55	21624	787
VISSCHER DAIRY LLC*	Jefferson	H	2/25/2019	1025	88	75.8	3.7	2.55	22824	803

[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).***

UGA extension

Top GA Lows Herds for SCC –TD Average Score – December 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	12/18/2018	H	30	18103	1.4	39	1.7	129
BRENNEMAN FARMS	Macon	11/30/2018	H	45	19830	2	59	1.9	160
DAVE CLARK*	Morgan	12/2/2018	H	1176	31063	2	156	2.2	204
BERRY COLLEGE DAIRY	Floyd	12/20/2018	J	34	16779	2.2	98	1.4	61
J.EVERETT WILLIAMS*	Morgan	12/10/2018	X	1944	27495	2.2	155	2.1	184
MARTIN DAIRY L. L. P.	Hart	11/21/2018	H	324	23591	2.4	192	2.3	173
AUSTIN WALDROUP	Troup	12/8/2018	H	145		2.6	134	2.7	207
IRVIN R YODER	Macon	11/27/2018	H	238	23475	2.6	140	2.2	140
COASTAL PLAIN EXP STATION*	Tift	12/19/2018	H	287	24858	2.6	198	2.4	214
DANNY BELL*	Morgan	12/7/2018	H	290	29031	2.6	251	2.1	181
JERRY SWAFFORD	Putnam	12/20/2018	X	113	17351	2.7	158	3	231
DOUG CHAMBERS	Jones	12/26/2018	H	422	25131	2.8	216	2.9	275
EBERLY FAMILY FARM	Burke	12/17/2018	H	1046	25777	2.8	275	2.3	199
ALEX MILLICAN	Walker	11/30/2018	H	99	17603	2.8	277	2.4	199
W.T.MERIWETHER	Morgan	12/11/2018	H	62	17292	2.9	235	3.2	309
UNIV OF GA DAIRY FARM	Clarke	11/29/2018	H	101	17732	3	183	3.1	242
MARK E BRENNEMAN	Macon	11/24/2018	H	139	18325	3	189	2.9	249
DONALD NEWBERRY	Bibb	11/24/2018	H	137	15137	3	199	2.8	214
LOUIS YODER	Macon	12/8/2018	H	113	20405	3	252	2.7	318
TROY YODER	Macon	11/29/2018	H	295	24946	3	284	2.9	219

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UGA extension

Top GA Lows Herds for SCC –TD Average Score – January 2019									
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	1/16/2019	H	32	18068	1	26	1.7	128
BRENNEMAN FARMS	Macon	1/7/2019	H	46	19448	1.7	63	2	161
MARTIN DAIRY L. L. P.	Hart	1/23/2019	H	323	23441	2	116	2.3	174
J.EVERETT WILLIAMS*	Morgan	1/7/2019	X	1963	27451	2	145	2.1	185
ALEX MILLICAN	Walker	12/28/2018	H	100	17590	2	176	2.4	202
IRVIN R YODER	Macon	1/17/2019	H	247	23823	2.1	117	2.2	140
DAVE CLARK*	Morgan	12/31/2018	H	1189	30992	2.2	160	2.2	202
AUSTIN WALDROUP	Troup	1/19/2019	H	149		2.3	168	2.7	203
EBERLY FAMILY FARM	Burke	1/10/2019	H	1041	25639	2.4	257	2.3	204
BERRY COLLEGE DAIRY	Floyd	1/17/2019	J	34	16942	2.5	125	1.6	71
SOUTHERN SANDS FARM	Burke	1/2/2019	H	93	24264	2.5	174	2.4	139
DOUG CHAMBERS	Jones	1/29/2019	H	438	25418	2.6	187	2.8	271
JAMES W MOON	Morgan	1/8/2019	H	122	17864	2.6	204	2.4	186
COASTAL PLAIN EXP STATION*	Tift	1/16/2019	H	282	24729	2.6	220	2.5	217
DANNY BELL*	Morgan	1/3/2019	H	289	28770	2.6	281	2.2	189
KIRK BUTCHER	Coweta	1/19/2019	H	341	19577	2.7	199	3	347
W.T.MERIWETHER	Morgan	1/8/2019	H	67	17246	2.7	202	3.2	304
RUFUS YODER JR	Macon	1/12/2019	H	158	22071	2.8	197	2.6	198
WILLIAMS DAIRY	Taliaferro	1/9/2019	H	134	22005	2.8	211	2.8	257
JERRY SWAFFORD	Putnam	1/26/2019	X	110	17065	2.9	194	3	231

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UGA extension

Top GA Lows Herds for SCC –TD Average Score – February 2019									
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	2/21/2019	H	37	17937	1.2	34	1.7	129
J.EVERETT WILLIAMS*	Morgan	2/11/2019	X	2019	27386	1.8	123	2.1	185
BRENNEMAN FARMS	Macon	2/8/2019	H	49	19284	1.9	151	2	167
MARTIN DAIRY L. L. P.	Hart	1/23/2019	H	323	23441	2	116	2.3	174
ALEX MILLICAN	Walker	2/26/2019	H	100	17502	2	154	2.4	197
BERRY COLLEGE DAIRY	Floyd	2/22/2019	J	31	17145	2	178	1.7	82
SOUTHERN SANDS FARM	Burke	2/19/2019	H	92	24223	2.1	115	2.4	138
IRVIN R YODER	Macon	1/17/2019	H	247	23823	2.1	117	2.2	140
EUGENE KING	Macon	1/31/2019	H	115	18969	2.3	117	2.3	164
SCHAAPMAN HOLSTEINS*	Wilcox	2/5/2019	H	752	26774	2.3	153	2.7	231
AUSTIN WALDROUP	Troup	1/19/2019	H	149		2.3	168	2.7	203
EBERLY FAMILY FARM	Burke	2/18/2019	H	1023	25520	2.3	191	2.3	201
DAVE CLARK*	Morgan	2/4/2019	H	1162	30912	2.3	208	2.2	205
SCOTT GLOVER	Hall	1/25/2019	H	179	26177	2.4	128	2.4	154
VISSCHER DAIRY LLC*	Jefferson	2/25/2019	H	1025	22824	2.4	168	2.8	242
COASTAL PLAIN EXP STATION*	Tift	2/19/2019	H	265	24541	2.4	169	2.5	215
W.T.MERIWETHER	Morgan	2/12/2019	H	68	17490	2.4	179	3.1	294
LOUIS YODER	Macon	2/20/2019	H	114	20000	2.4	244	2.7	319
JAMES W MOON	Morgan	2/12/2019	H	120	17686	2.5	174	2.4	182
DOUG CHAMBERS	Jones	2/26/2019	H	427	25652	2.5	196	2.8	271

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UGA extension