

Lueken Dairy Farm

Lung Scanning Data Collection 8/11/2020 to 5/31/2021

Lung Score Ranges from 1 to 6 (1 = Best and 6 = Worst)

- Any score ≥ 4 is considered lung damage
 - 4, 5, 6 have different sizes of lung damage (see the figure showing pictures of the different scores)
 - Does a small amount of lung damage have an effect on growth and production?

Animals Scanned

- # scanned between 53 and 85 days of age (average 65 d old): 274
- # scanned between 133 and 222 days of age (average 167): 258

Birthweight

- # of calves with Birthweight: 189
- Average birthweight: 93 pounds
- Minimum birthweight: 50 pounds
- Maximum birthweight: 132 pounds
- No effect of birthweight on the calves' chance to obtain lung damage

Death Rate

- 124 calves died from ID 9938 to 431 (birthdates: 4/28/2020 to 12/27/2020)
 - Between these dates 429 heifer calves and 124 died
 - **29% death rate**
- % of animals died before 30 days old
 - 56%
- % of animals died between 30-60 days old
 - 4%
- % of animals died between 60-100 days old
 - 9%
- % of animals died between 100-200 days old
 - 22%
- % of animals died between 200-400 days old
 - 10%

Lung Scanning Statistics

Lung Score at Weaning	Percentage
No Lung Damage	78%
Single Side Lung Damage	15%
Double Side Lung Damage	7%

Lung Score at 5.5 months	Percentage
No Lung Damage	72%
Single Side Lung Damage	16%
Double Side Lung Damage	12%

	Weaning	
5.5 months Lung Damage	+	-
+	5%	21%
-	10%	64%

- 21% of calves did not have lung damage at weaning but had lung damage at 5.5 months
 - Calves are getting lung damage during the post-weaning phase when calves are grouped together
- 10% of calves with lung damage at weaning did not have lung damage at 5.5 months
 - Lung damage can heal over time
 - 15 of the 18 calves who didn't have lung damage at 5.5 months only had lung damage on 1 side of their body

Body Weight Growth

- Weaning

Lung Score	Birthweight (lbs.)	Age (days)	Weight (lbs.)	ADG (lbs./day)	% in Each Score
1	96	65	207	1.66	18%
2	92	65	197	1.58	41%
3	95	65	197	1.44	20%
4	91	64	185	1.37	15%
5	87	65	195	1.68	5%
6	102	63	145	0.79	1%

Lung Damage	Birthweight (lbs.)	Age (days)	Weight (lbs.)	ADG (lbs./day)	% in Each Score
No Damage	94	65	199	1.56	79%
Single Side	89	64	193	1.50	15%
Double Side	92	64	168	1.27	7%

- Average 167 d old (5.5 months)

Lung Score	Birthweight (lbs.)	Age (days)	Weight (lbs.)	ADG (lbs./day)	% In Each Score
1	95	170	451	2.02	22%
2	91	167	431	1.94	39%
3	96	163	431	1.84	8%
4	96	168	409	1.82	13%
5	97	167	375	1.62	13%
6	99	163	313	1.50	4%

Lung Score	Birthweight (lbs.)	Age (days)	Weight (lbs.)	ADG (lbs./day)	% of Animals
No Lung Damage	93	168	434	1.96	72%
Single Side	97	167	399	1.72	16%
Double Side	99	166	358	1.59	12%

Heifer Breeding Data

- Age of conception (41 heifers with 5-month lung score records and were diagnosed pregnant)
 - No lung damage: 449 days (30 calves)
 - Lung Damage: 463 days (11 calves)
- Age of conception (41 heifers with 5-month lung score records and were diagnosed pregnant)
 - Lung score 1-3: 449 days (30 calves)
 - Lung Score 4: 449 days (8 calves)
 - Lung Score 5-6: 499 days (3 calves)

This is a trend and there are not enough calves to prove this data. Upon observation, 60% of the calves with lung damage (>4 on one or both sides of lungs) who were of age to be pregnant and were open or not bred yet had 5 or 6 lung score and 40% of calves had a score of 4. This suggests that calves with scores of 4 were not as severely affected by respiratory disease as those with a 4 or 5

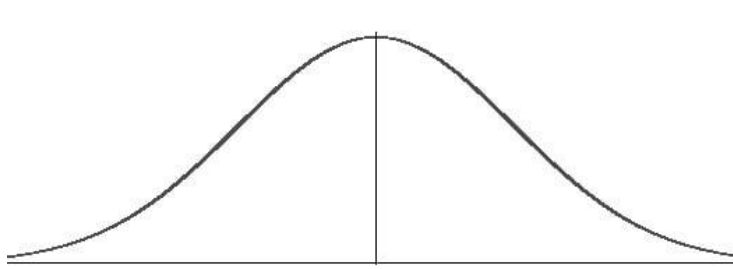
Thoughts based on the year of lung scanning

1. Death Rate

- a. 2019 (Mortality-Culling Rates of Dairy Calves and Replacement Heifers and Its Risk Factors in Holstein Cattle)
 - i. 3 to 60 days: 5.5%
 - ii. 61-365: 7.4%
- b. Lueken Dairy
 - i. 0-60 days: 17%
 - ii. 61-365: 11%
 - iii. The highest periods of death are from 0-30 days and 100-200 days of age
- Areas to look into for death rate decrease in calves 0-30 days old
 - Newborn care/colostrum management
 - Good quality and amount of colostrum
 - Timely colostrum consumption
 - Antibiotic treatment of calves
 - 73% of weaned calves treated with Excede at an average of 6 days old
 - Use another antibiotic (resflor or draxxin)
 - Consider using banamine (resflor or draxxinkp have banamine in the drug) to help with fever
 - Look into the milk being fed to calves
 - Waste milk/milk replacer/bulk tank milk
 - If waste milk then bacteria count should be checked
- Areas to look into for death rate decrease in calves 100-200 days old
 - Calves are getting respiratory disease during the grouping period
 - Organize groups of calves in an all in and all out system
 - Place calves in a pen and don't add or take out calves
 - Consider administering intranasal vaccination (talk with veterinarian) before grouping or at group to deal with viral respiratory
 - When bringing back to the big barn at calf hutches consider grouping by weight instead of one big group

2. Lung Scanning

- a. Calves with lung scores of 4 on either or both sides should be reconsidered before culling
- b. Lung scores are not always final. Respiratory disease is like a bell curve. Lung score can increase and decrease as the respiratory disease evolves



- c. When is the best time to lung scan for increased accuracy of treatment diagnoses that will help with death rates?
 - i. 2-3 weeks after entering into group housing
 - 1. Increase accuracy of diagnosing lung damage and allow animals to heal efficiently if treated in a timely manner
- d. When is the best time to lung scan calves and cull animals?
 - i. Before leaving for heifer raiser
 - 1. Slower growing and higher conception age
 - ii. Other data has shown that in the proper conditions calves with lung damage will continue to grow and, in some cases, even catch up to other healthy calves later in life
 - 1. Instead of using animals for reproductive purposes put them in a fat lot to grow and become protein for others instead of selling as a young cull cow after freshening