



**CARTHAGE**  
VETERINARY SERVICE

# Swine Health Through Nutrition: Cooperative Strategies to Maximize Productivity

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# Introduction

- Health and Nutrition both play a major role in swine production.
- When both teams are on the same page you can make major improvements.
- Sometimes the two departments within a company are not always aligned.
- This can cause frustration for not only those departments but for the entire company.
- But when vets and nutritionists are working together great things happen!

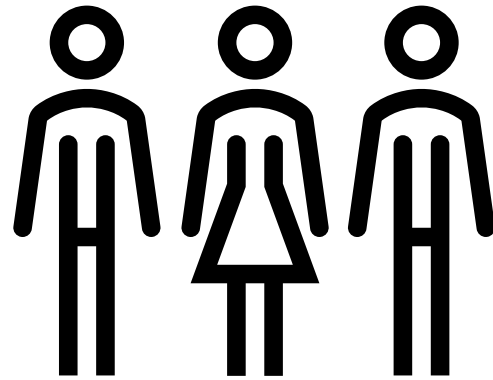
# When 2 Great Things Come Together!



# Team Approach Essential to Success



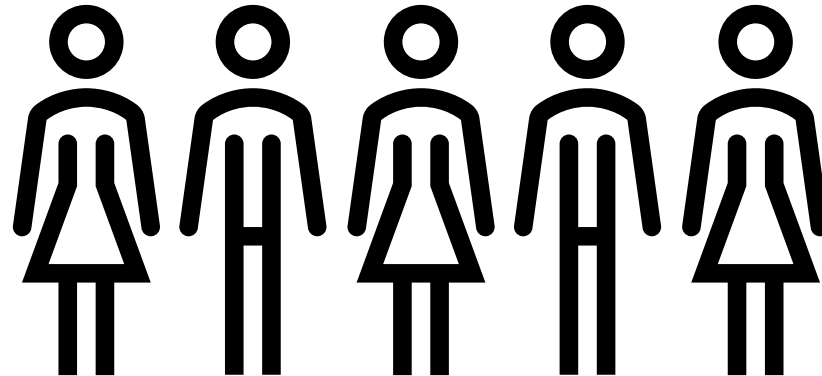
Barn Staff



Field Team

Nutritionist

Veterinarian



Research Team

Industry Support

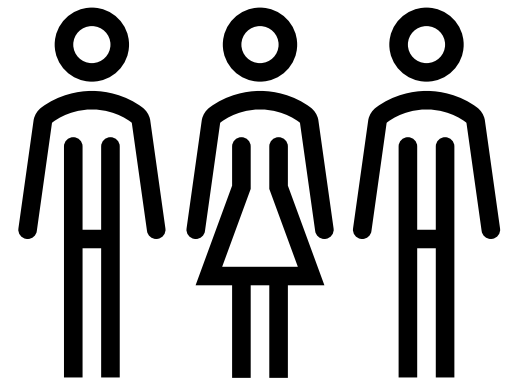
# Define the Problem



Hey Doc, I have a problem!

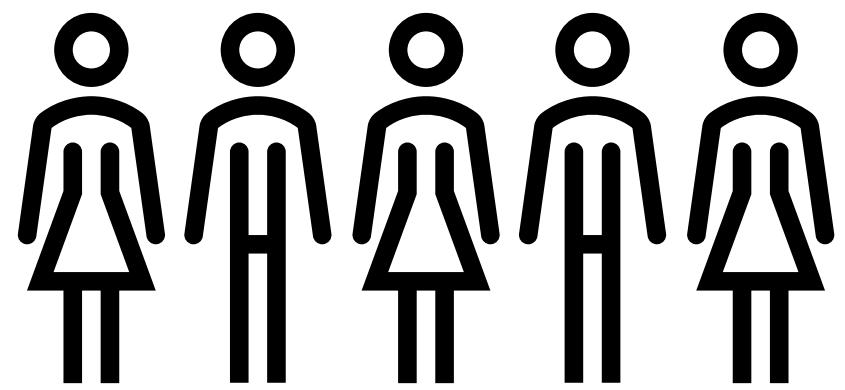


Barn Staff



Field Team

Nutritionist



Industry Support

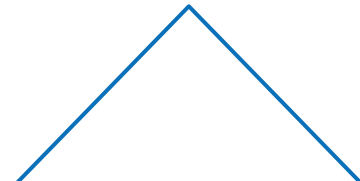


# Define the Problem

- Strive for Clear and Consistent Communication



How much diarrhea do these pigs have?

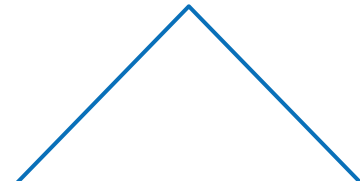


# Define the Problem

- Strive for Clear and Consistent Communication



How much diarrhea do these pigs have?



# Define the Problem

- Strive for Clear and Consistent Communication
  - Joint Visits
    - See the problem at the same time!
    - Minimum of people doing chores everyday, veterinarian and nutritionist +/- production team, owner
  - Get the Who, What, When, Where
    - Get details as objective as possible



# Define the Problem

- Strive for Clear and Consistent Communication



- Who: sow flow, mixed sex
- What: 4-6 piles of watery diarrhea per pen of 25 pigs = 15-25% diarrhea
- When: 3 weeks on feed, 2 days after diet transition
- Where: all pens affected, all barns affected, 3 sites/placements in a row

# Nutritionist Perspective

- How you approach the communication is important.
  - How the problem is explained
  - Saying "nutrition problem" has many different meanings to different people
  - Do you mean:
    - Formulation
    - Feed quality (particle size, color, smell, foreign material),
    - Wrong phase of feed, etc
- Who do you talk with.
- How results are shared.

# Health Perspective

**Pigs Resistance  
to Disease +  
Environmental  
Stressors**



**Number of  
Pathogenic *E. coli***

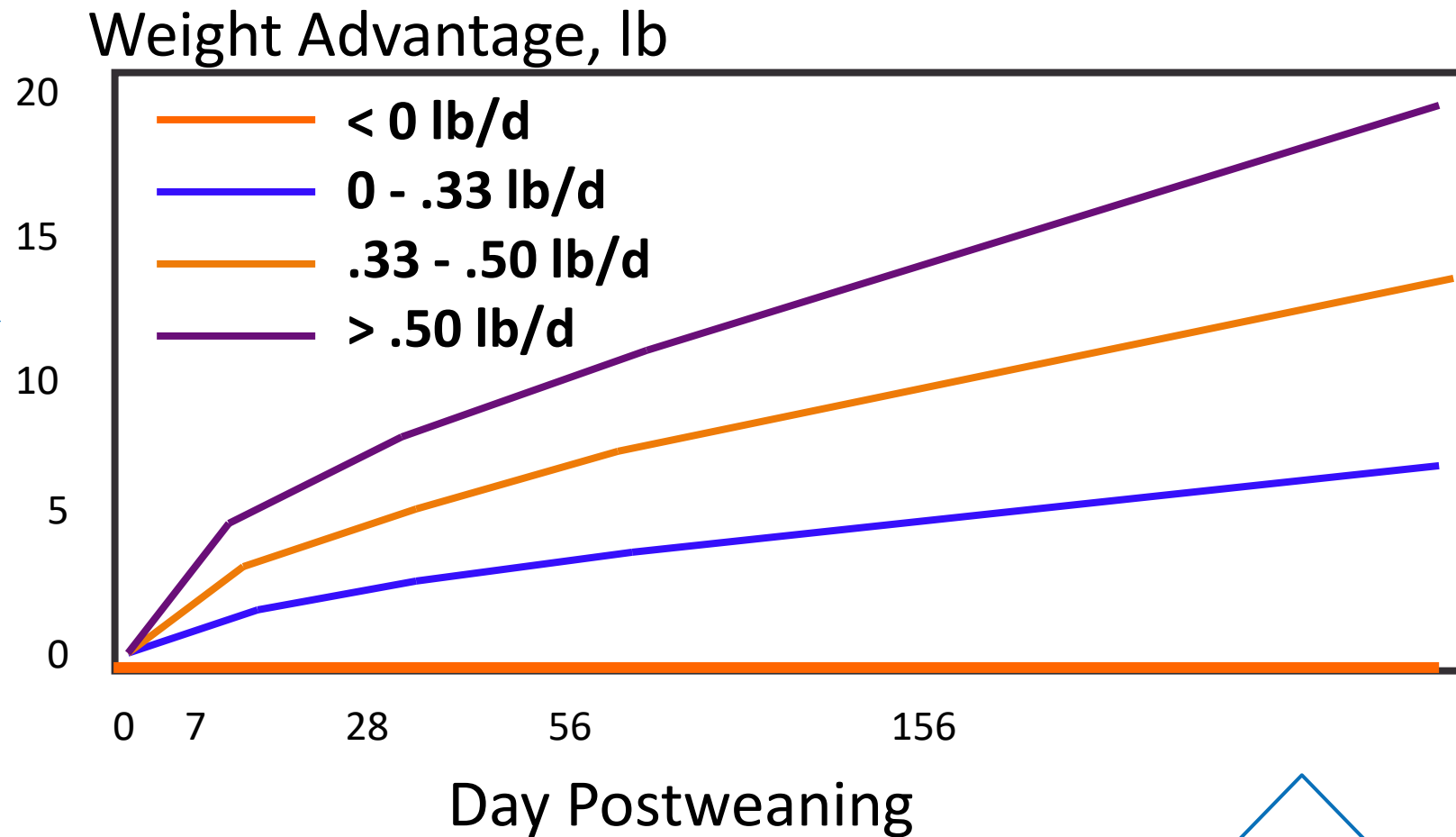
# Current Nursery Performance Goals

Production Type	Weight In	Weight Out	ADG	ADFI	FCR	Days on Feed	Mortality, %
Nursery, lb	12.00	55.00	0.96	1.33	1.42	45.37	1.53
Nursery, kg	5.44	24.95	0.43	0.60			

Personnel communication, Gomez, January 5<sup>th</sup> 2023



# Influence of Growth During the First Week Post Weaning on Subsequent Performance



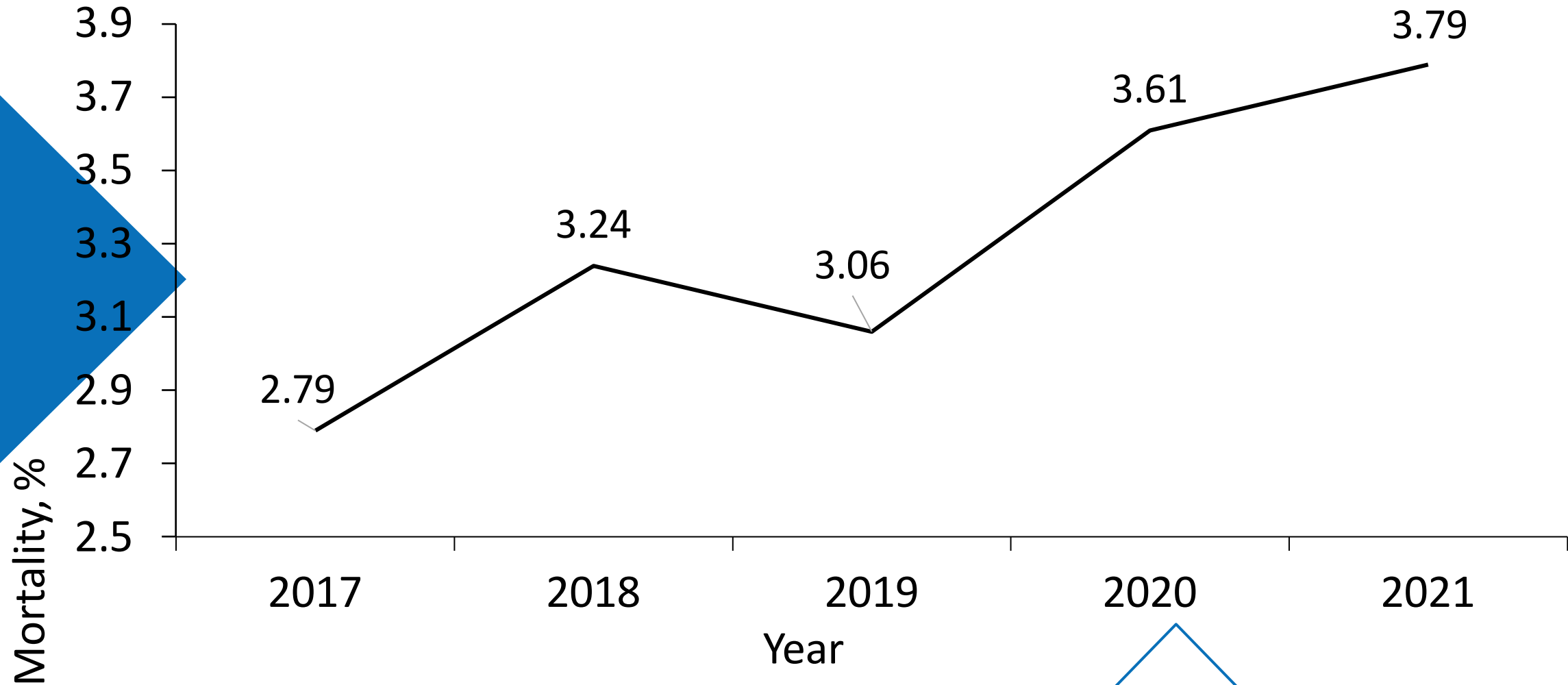
# Feed Intake the first week after weaning

- Low feed consumption immediately after weaning disrupts nutrient intake and results in what is commonly known as a post-weaning growth check.

	Body weight changed	
	Gained	0 to 3 post-weaning Lost
End of nursery wt, lb	83.3	77.4
End of finisher wt, lb	310.4	300.0
Lifetime gain, lb	306.9	296.7

- Some pigs fail to make the weaning transition, leading to increased morbidity and mortality.

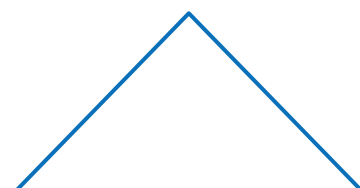
# Nursery Mortality, %



Adapted from MetaFarms, 2021

A person wearing a light-colored shirt and dark overalls is holding a small piglet. The piglet is looking towards the left. The background is a soft, out-of-focus green.

# Ideas or things to remember

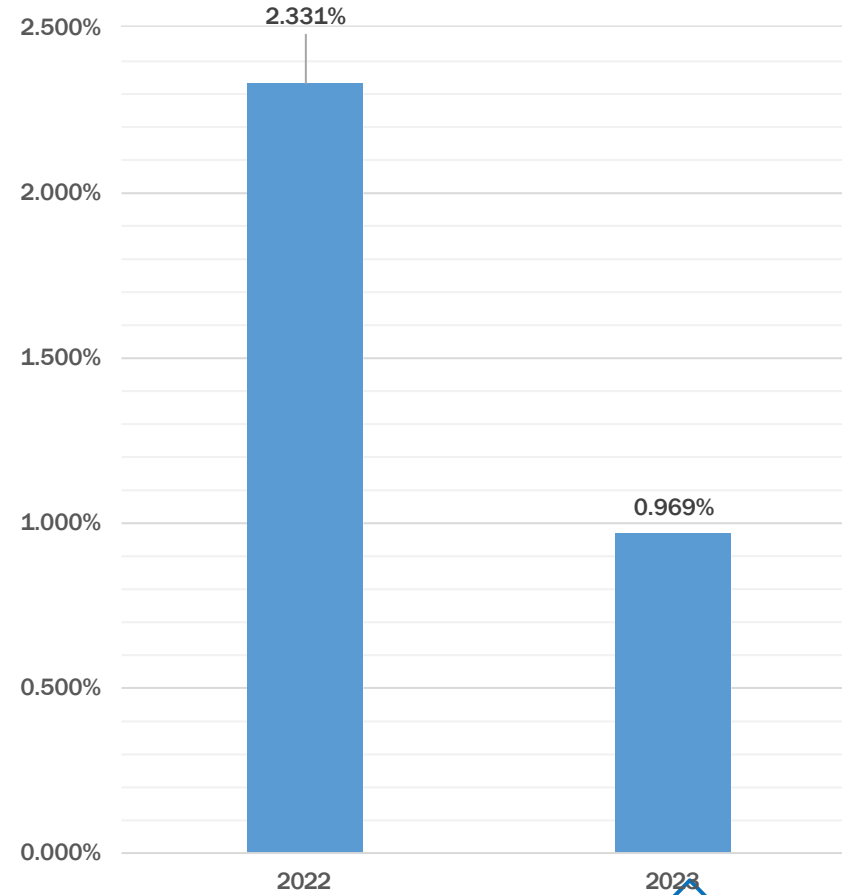
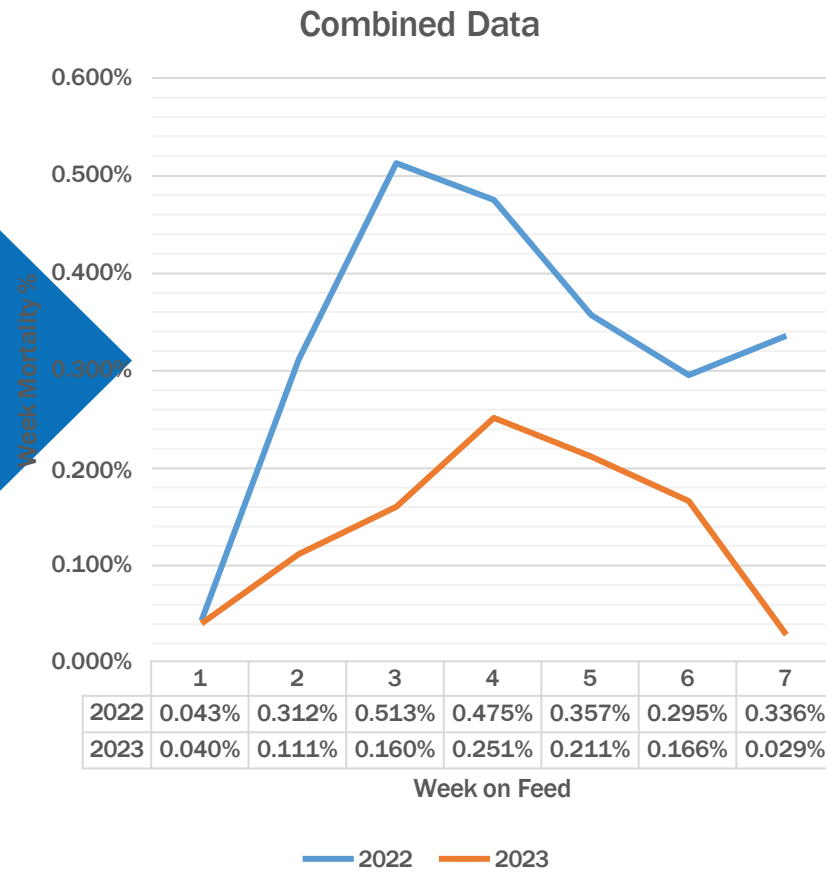
- Communication with vet, production team, etc about the plan
    - Try again
  - Don't be defensive
  - Have an open mind
  - Follow up – another barn visit if possible
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- A simple blue line drawing of a triangle pointing upwards, located in the bottom right corner of the slide.



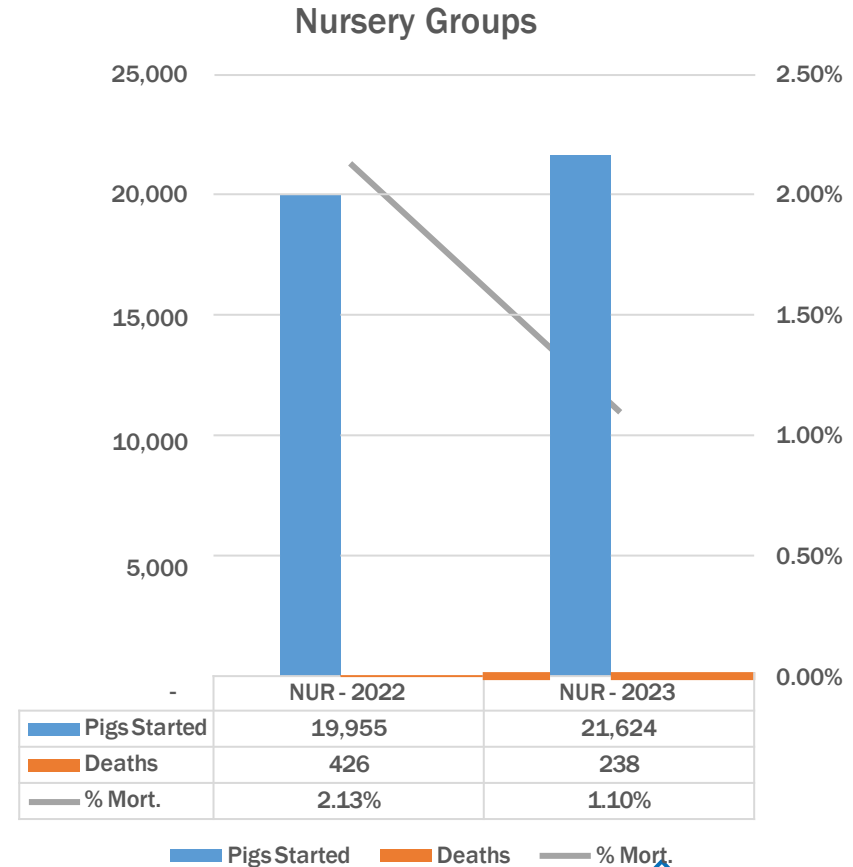
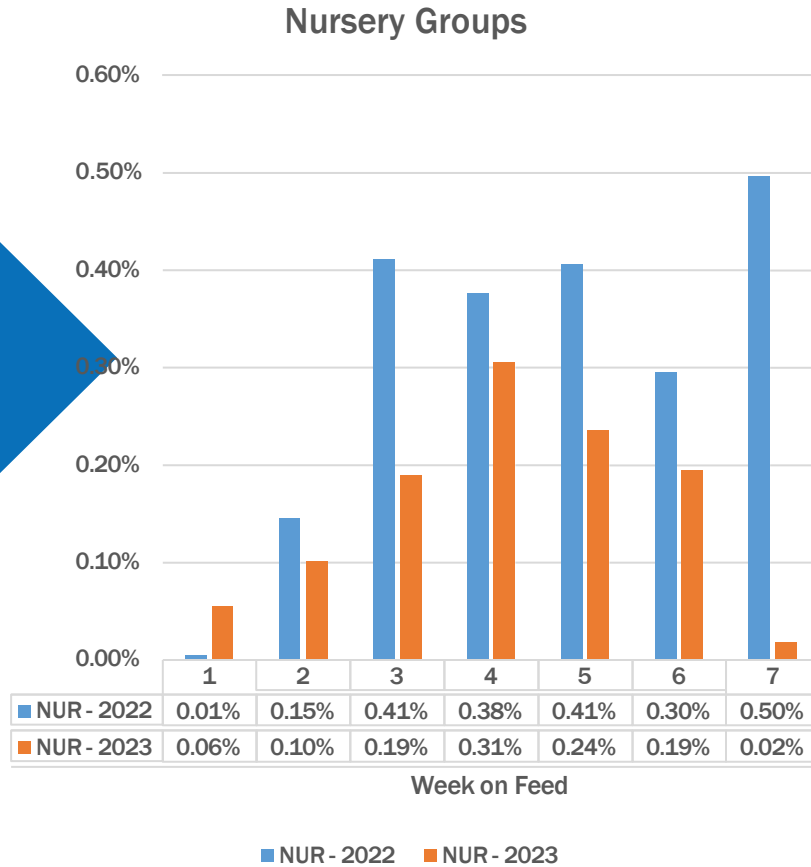
# Example #1

- Understand “nursery phase” mortality after implementing
- Carthage Nursery Feeding Program
- Used mortality data from MetaFarms
  - Nursery & W2F Group type
  - Week 1 through 7 on feed for both group type
- Groups placed on feed compared:
  - Old nursery program, placements September 15, 2022, to December 31, 2022
  - New nursery program, placements January 1, 2023, to April 15, 2023
- No other variables taken into consideration
- Only groups with weekly mortality reported were included

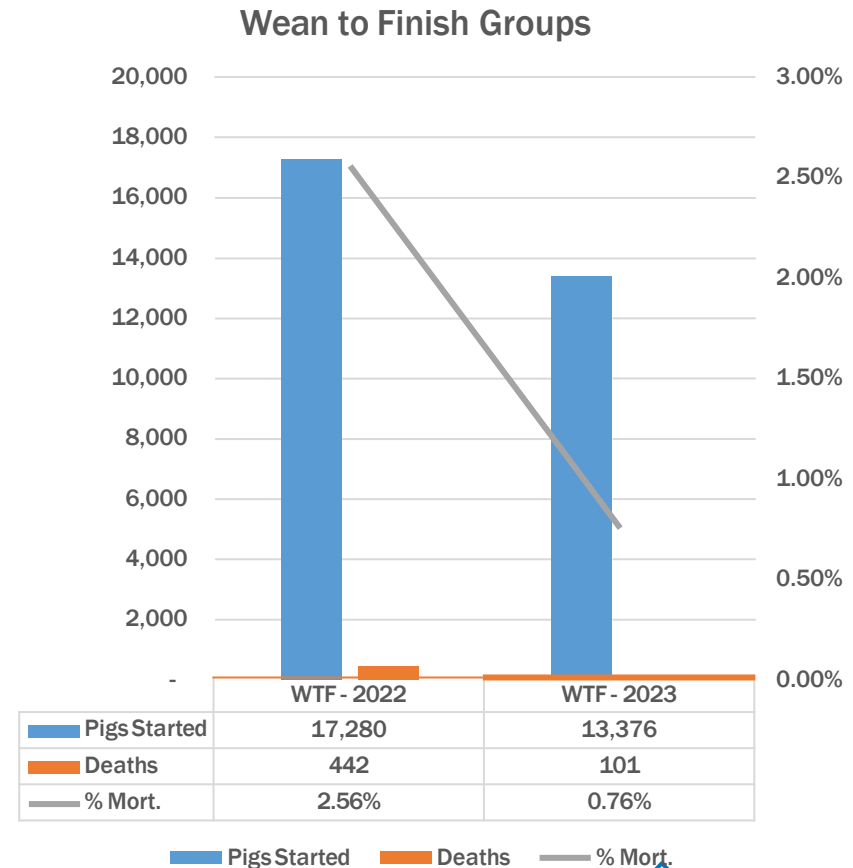
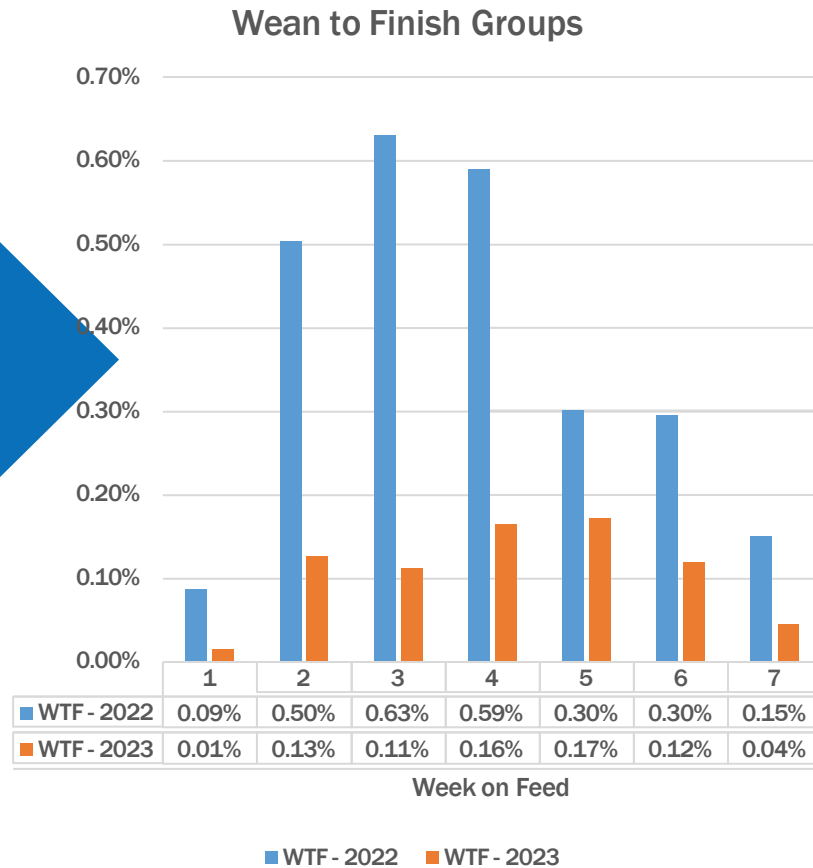
# Combined Data



# Nursery Groups



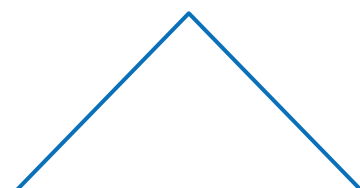
# Wean to Finish Groups



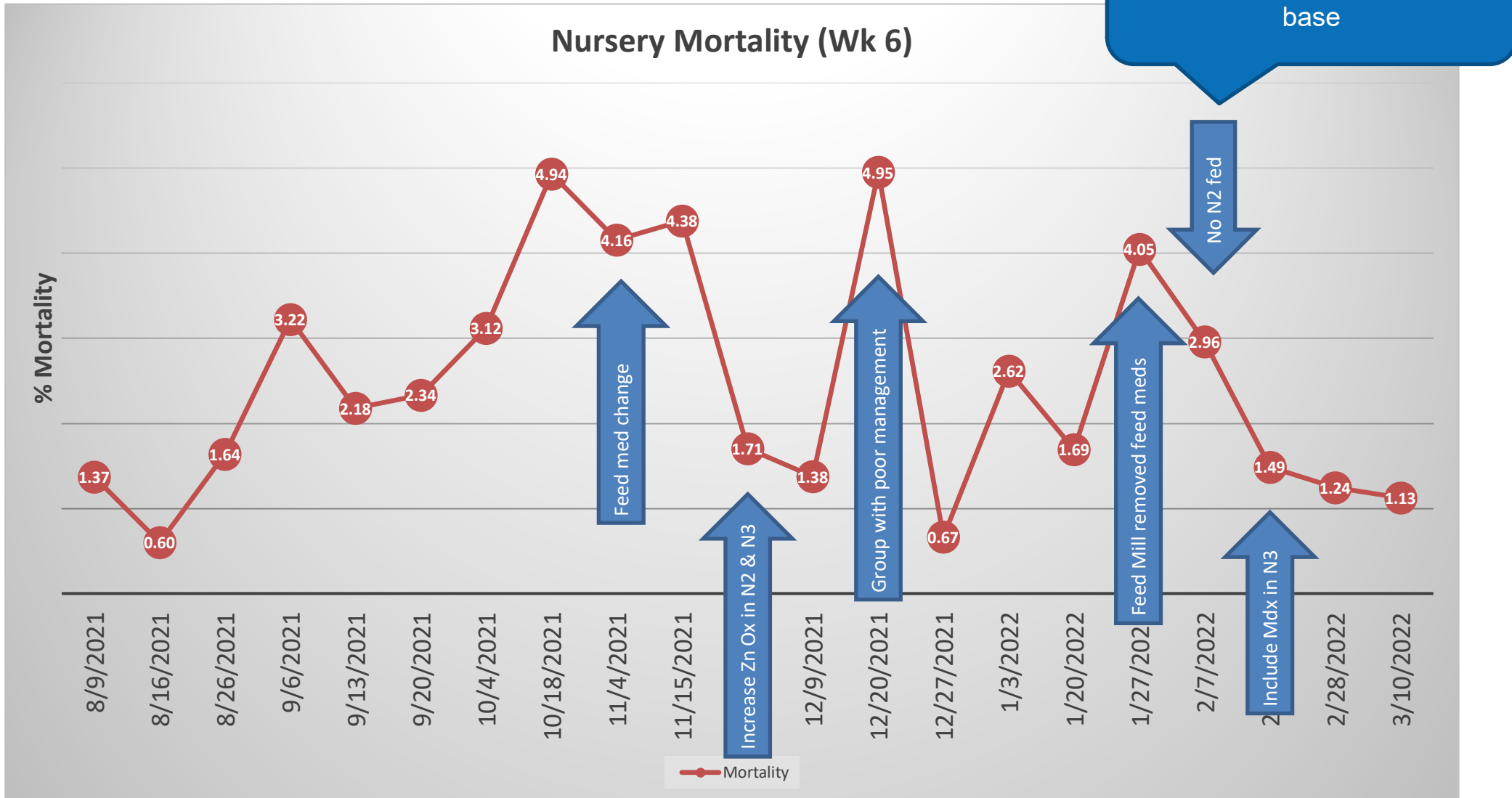


A person wearing a light-colored shirt and dark overalls is holding a small piglet. The background is a soft, green-tinted image of the person and the piglet. The person's face is partially visible at the top left, and the piglet is in the center, looking towards the left. The overall scene is a close-up of the person and the piglet.

## Example #2

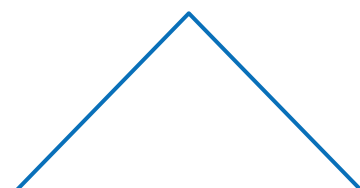
- Producer with nursery mortality roller coaster that has been low and high
  - Worked with vet on several improvements
  - Updated nursery ingredients
- 
- A simple blue line drawing of a triangle pointing upwards, located in the bottom right corner of the slide.

# Nutrition interventions



A person wearing a white shirt and dark overalls is holding a small piglet. The image is partially obscured by a green overlay on the left side of the slide.

## Example #3

- Nursery scours
  - Producer had been battling scours for a while
  - Worked with their vet on updating their diets with different ingredients and source of ingredients
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- A blue triangle graphic pointing upwards, located at the bottom right of the slide.







# Nursery Research Trial



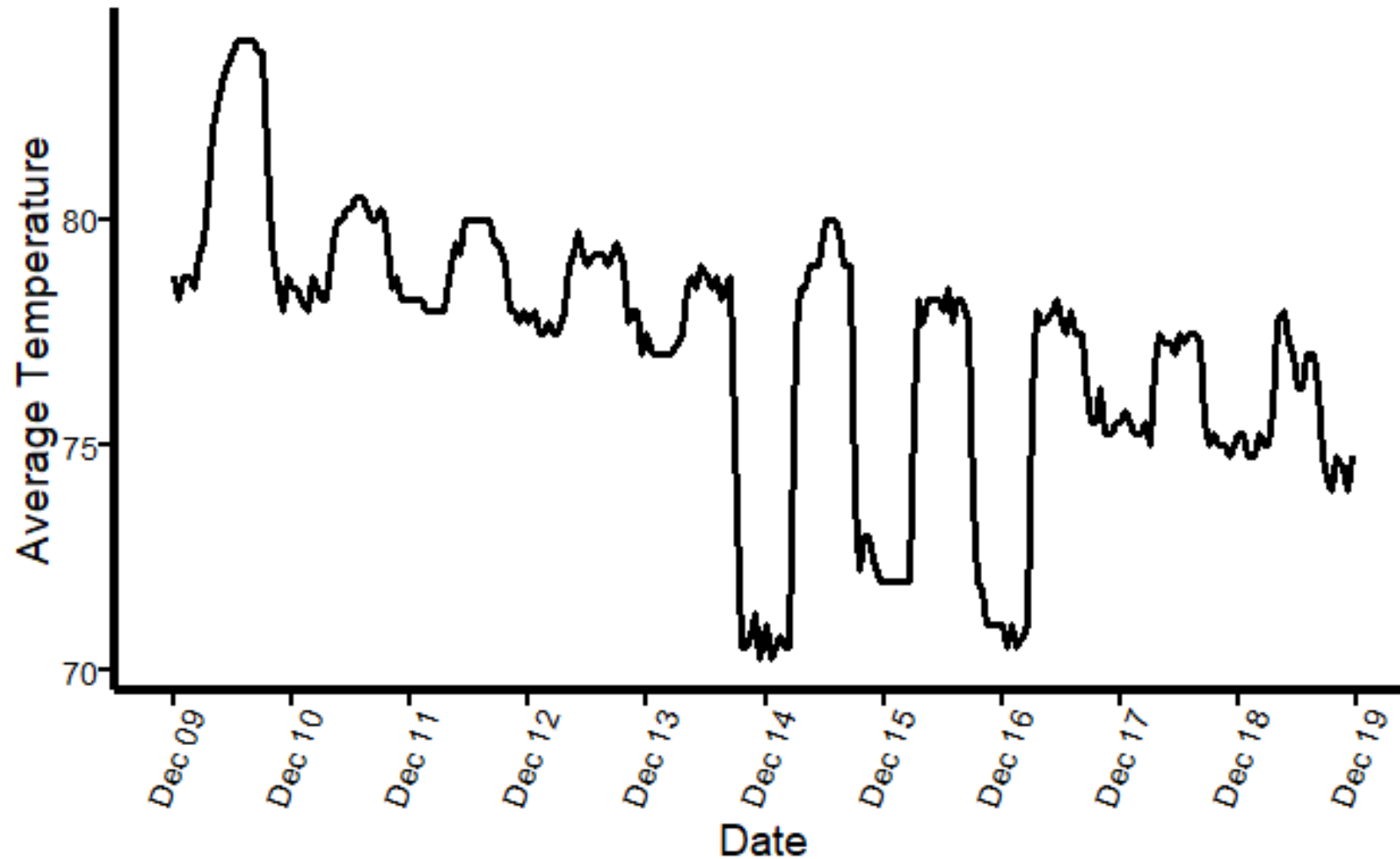
- 1,272 weaned pigs
- PIC 337 x 1050
- 26-27 pigs/pen
- 12 replications per treatment
- 4 treatments
- 3 nursery phases from weaning to 65 lbs
  - Phase 3 was a common diet



# Nursery Research Trial

- **4 Treatments:**
- T1: Commercially available nutrition program
- T2: Current Carthage nutrition program
- T3: New Carthage nutrition program
- T4: T3 + higher level of oats
  
- **Feed Budget:**
- Phase 1: 5 lbs
- Phase 2: 15 lbs

# Pigs were chilled to cause extra stress



# Phase 1

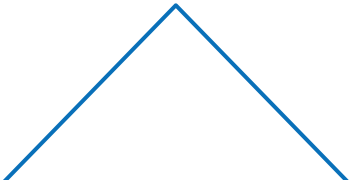
Performance Matrices	Feed Treatments				SEM	P-value
	T1	T2	T3	T4		
Start weight, lb	14.76	14.78	14.77	14.78	0.12	0.20
Phase 1						
End weight, lb	17.03a	17.29a b	17.34ab	17.46b	0.18	0.02
ADG, lb	0.32a	0.35ab	0.37ab	0.38b	0.01	0.03
ADFI, lb	0.64	0.64	0.64	0.62	0.01	0.66
FCR	1.92b	1.86ab	1.78ab	1.65a	0.07	0.03
Removed, %	0.00%	0.94%	0.00%	0.00%	0.01	1.00



# Phase 2



Performance Matrices	Feed Treatments					
	T1	T2	T3	T4	SEM	P-value
Phase 2						
End weight, lb	31.98	32.12	32.27	32.63	0.33	0.25
ADG, lb	1.06	1.05	1.05	1.07	0.02	0.70
ADFI, lb	1.37	1.36	1.32	1.33	0.02	0.11
FCR	1.30	1.30	1.26	1.24	0.03	0.33
Removed, %	0.94%	0.95%	1.57%	0.94%	0.01	0.84



# Phase 3

Performance Matrices	Feed Treatments				SEM	P-value
	T1	T2	T3	T4		
Phase 3						
End weight, lb	67.47	67.13	67.83	67.80	0.57	0.68
ADG, lb	1.67	1.64	1.67	1.67	0.02	0.73
ADFI, lb	2.56	2.56	2.49	2.52	0.03	0.15
FCR	1.51ab	1.53b	1.48a	1.51ab	0.02	0.06
Removed, %	0.95%	1.28%	1.28%	0.63%	0.01	0.84

# Overall Nursery

Performance Matrices	Feed Treatments				SEM	P-value
	T1	T2	T3	T4		
<b>Cumulative Nursery</b>						
<b>ADG, lb</b>	1.24	1.22	1.25	1.25	0.01	0.34
<b>ADFI, lb</b>	1.84b	1.83ab	1.78a	1.80ab	0.02	0.02
<b>FCR</b>	1.46ab	1.48b	1.43a	1.44ab	0.01	0.02
<b>Removed, %</b>	3.92%	4.00%	3.70%	3.85%	0.01	0.52



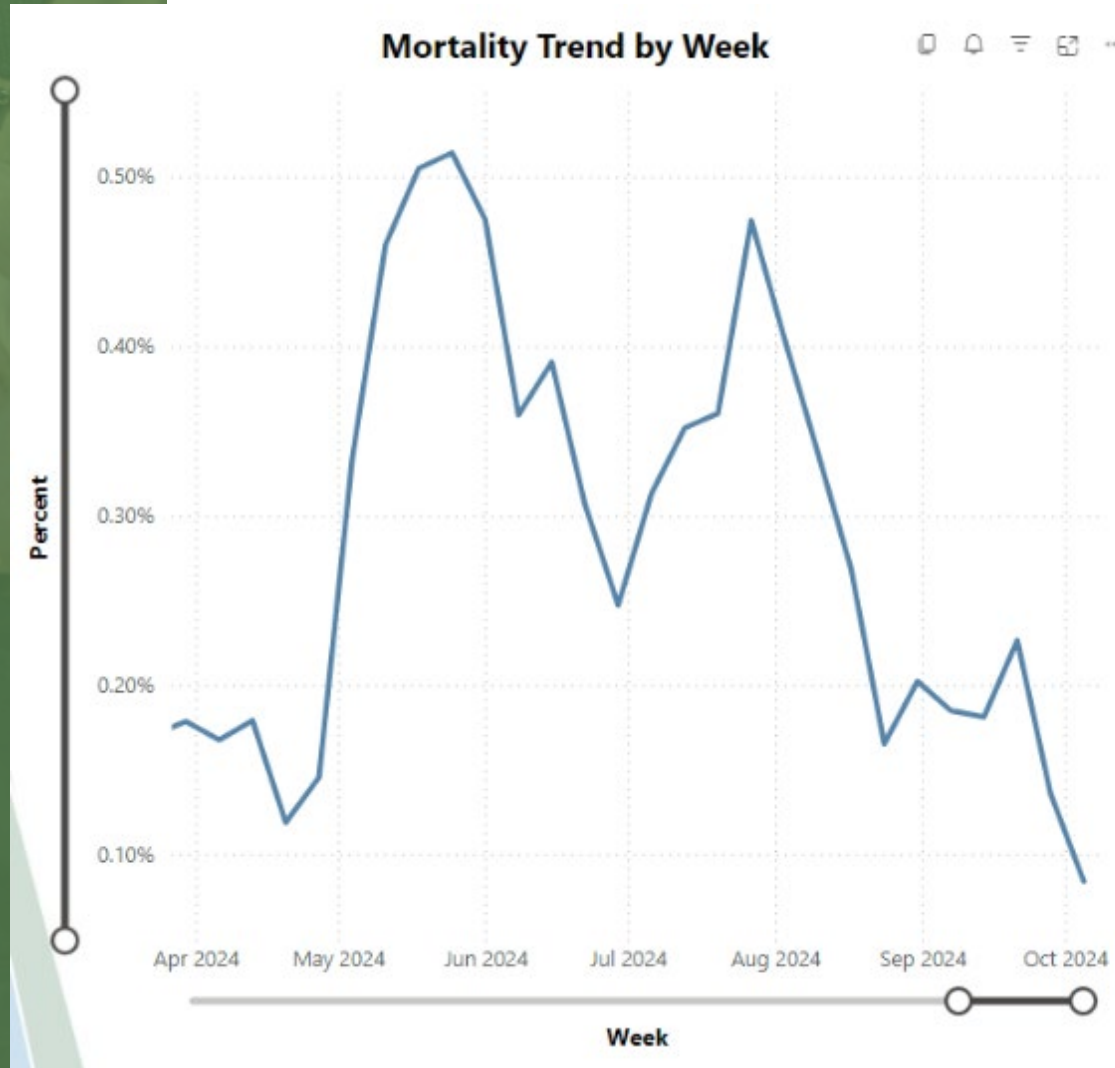
# Nursery Research Trial

- Overall the pigs performed really well.
  - The stress event seemed not to have much of an impact.
  - The new nursery program with low oats or high oats numerically performed the best.
  - The overall trial summary is not completed yet.
- 
- **Research data and field data have supported the Carthage nursery program has improved performance.**

# PRRS Example

- Client Expectation – low mortality, high ADG
  - Base PRRS program is solid nursery ration, antibiotic at wean, PRRS vaccine at processing and weaning, tilmovet in first 20 lbs of feed, liquitein APF and immufend in water in first 2 weeks
- Nutrition Changes for This PRRS Break
  - Double oats in N1 and N2
  - Increase dose of probiotic and extend to N3 ration
  - 1 lb N0 on 15-20% of pigs
- Medication Change for This PRRS Break
  - Aivlosin administered orally pre-farrow for first 16 weeks of PRRS break
  - Aivlosin administered in water at 1 WPW

# PRRS Example



Averaged 0.08% per week in 16 weeks prior to break

PRRS Diagnosed Week 15 – Mid April

Week	Mortal	Column1
4/20/2024	0.06%	PRRS diagnosed
4/27/2024	0.08%	
5/4/2024	0.25%	
5/11/2024	0.40%	
5/18/2024	0.45%	
5/25/2024	0.44%	
6/1/2024	0.40%	
6/8/2024	0.28%	
6/15/2024	0.32%	
6/22/2024	0.19%	
6/29/2024	0.17%	
7/6/2024	0.22%	
7/13/2024	0.23%	
7/20/2024	0.20%	
7/27/2024	0.31%	
8/3/2024	0.21%	
8/10/2024	0.23%	
8/17/2024	0.11%	
8/24/2024	0.06%	
8/31/2024	0.08%	
9/7/2024	0.11%	
9/14/2024	0.03%	

# Case Studies Conclusion

- Nursery performance has been a struggle over the last several years
- So now is more important than ever that we work together
- Working with all the experts in their field will help find a solution faster
- Positive results are possible – don't give up
- Reviewing nutrition formulation and ingredients can help



# Take Home Message

**EVERYBODY  
HAS A PLAN  
UNTIL THEY GET  
PUNCHED  
IN THE MOUTH**

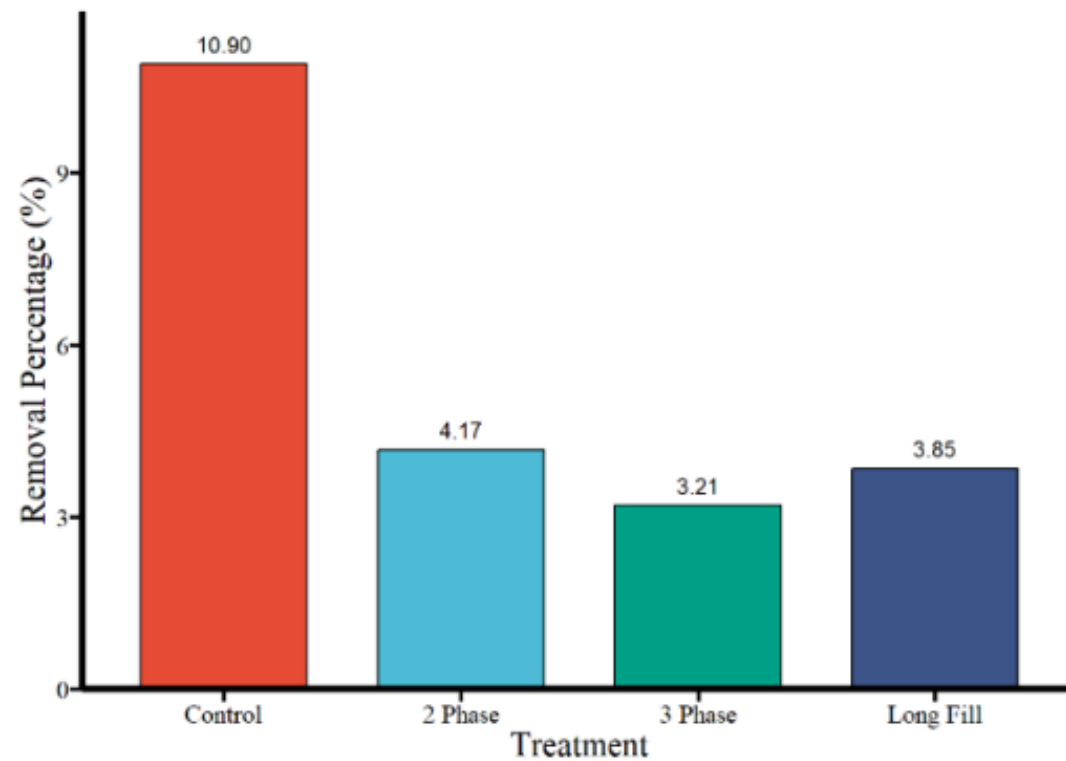


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# Take Home Message

- Team Approach Essential for Success

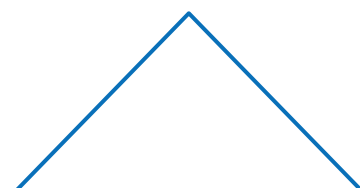
Figure 4. Cumulative removals





A person wearing a white long-sleeved shirt and green overalls is holding a small piglet. The background is a blurred green field.

# Take Home Message

- You are on the same team – same goals
  - Work together for the benefit of the pigs
  - Spending time in barn together is one of the best opportunities to learn and brain storm - should be done many times per year
  - Sharing information as you learn it
  - Celebrate the success
  - Repeat
- 
- A simple blue line forming an upward-pointing triangle, located in the bottom right corner of the slide.

# Thank You

Dr. Elise Toohill, [etoohill@hogvet.com](mailto:etoohill@hogvet.com)  
Casey Neill, [Cneill@hogvet.com](mailto:Cneill@hogvet.com)



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