

How can I help your hatchery?

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Global Hatchery Technical Services

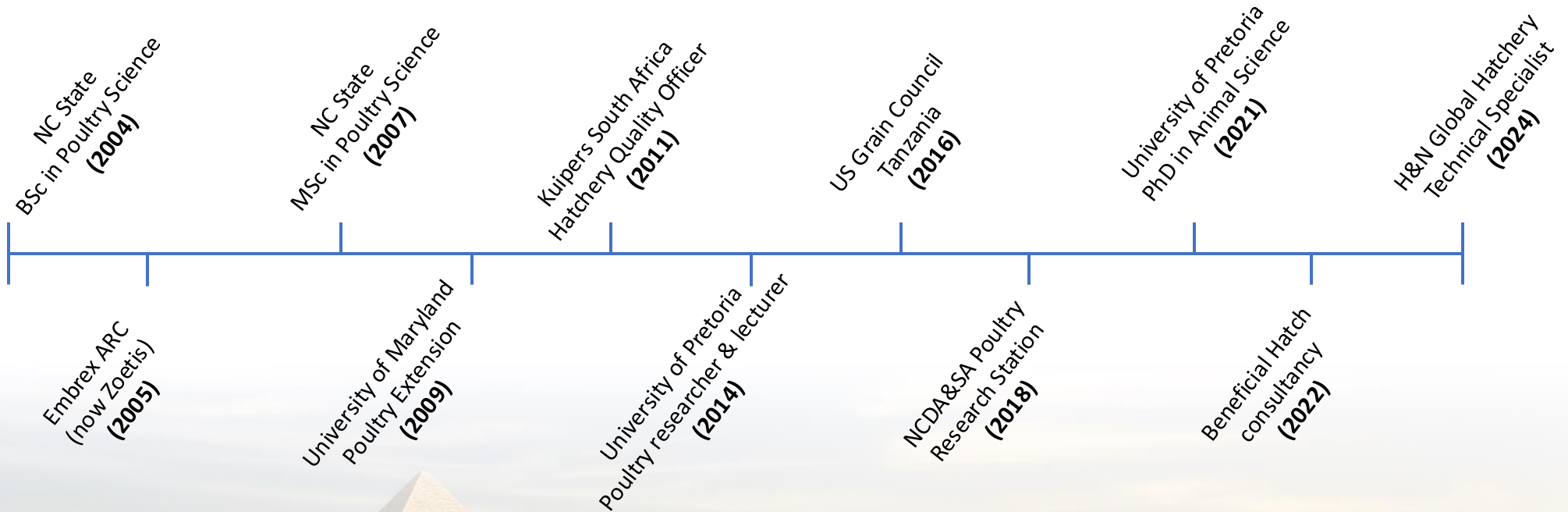
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Background:



20 years of thinking about chickens and how to hatch them!

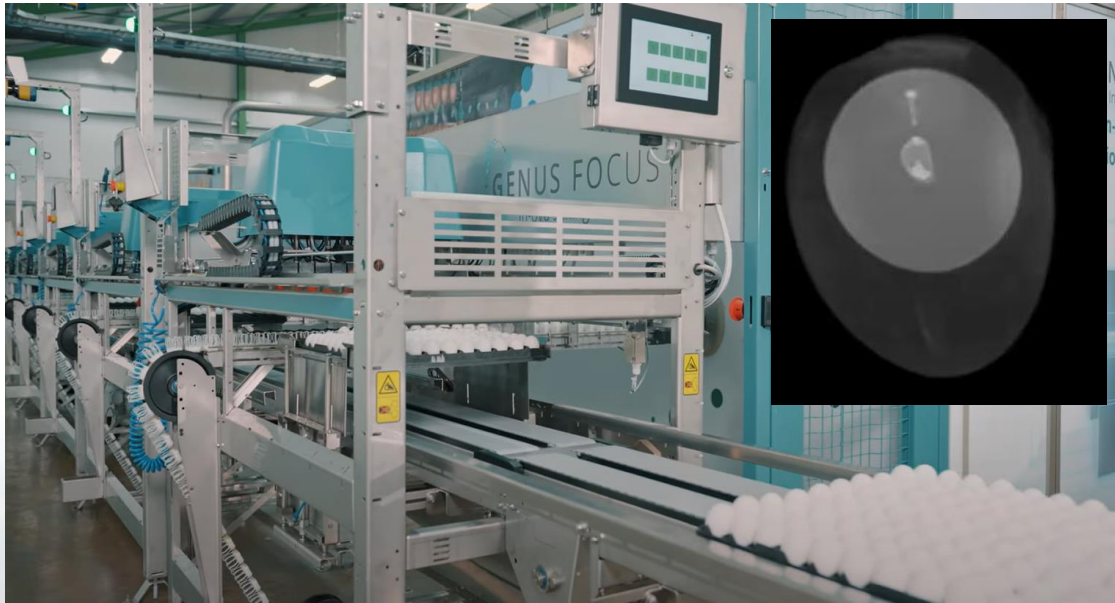
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What have I learned?



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Basics remain the same!



(Photos: Lenny Hogerwerf, 2006)

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Basics remain the same!



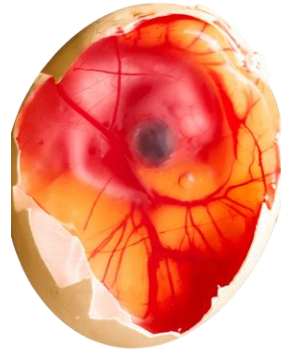
- Technology is no guarantee of successful hatch
- Key factors for success?
 - ATTENTION TO DETAILS
 - CONSISTENT QUALITY
 - DATA-BASED DECISIONS

Details - TEMPERATURE



- Before setting:

- Farm storage
- Egg transport
- Hatchery storage
- Pre-heating



- During incubation:

- Setter
- Transfer
- Hatcher



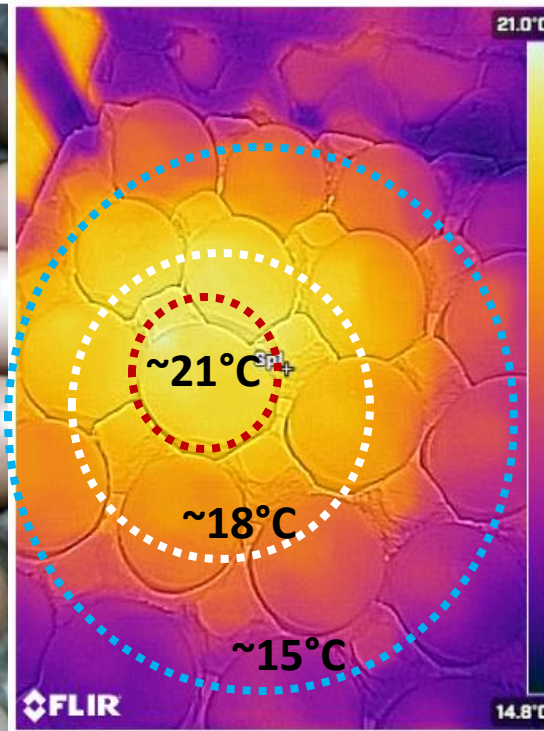
- After hatch:

- Hatch pull
- Processing
- Holding
- Transport
- Placement

Details – Egg storage



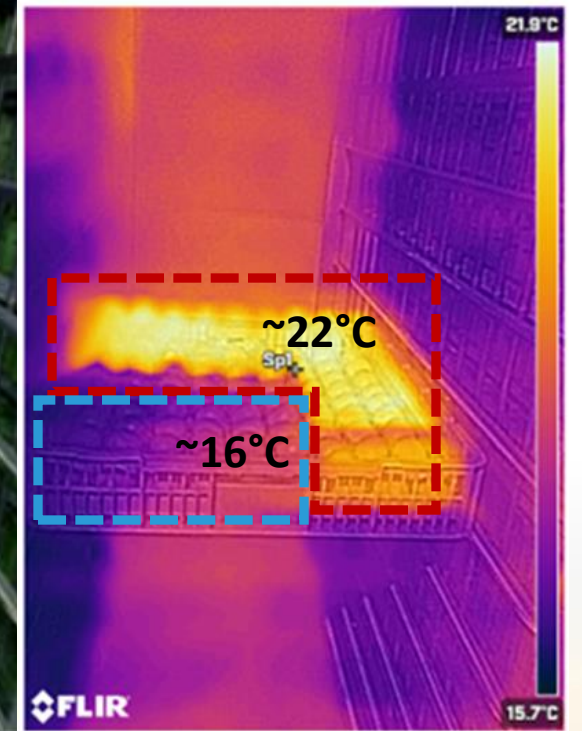
DC - IMG_1217.JPG



IR - IMG_1217.JPG

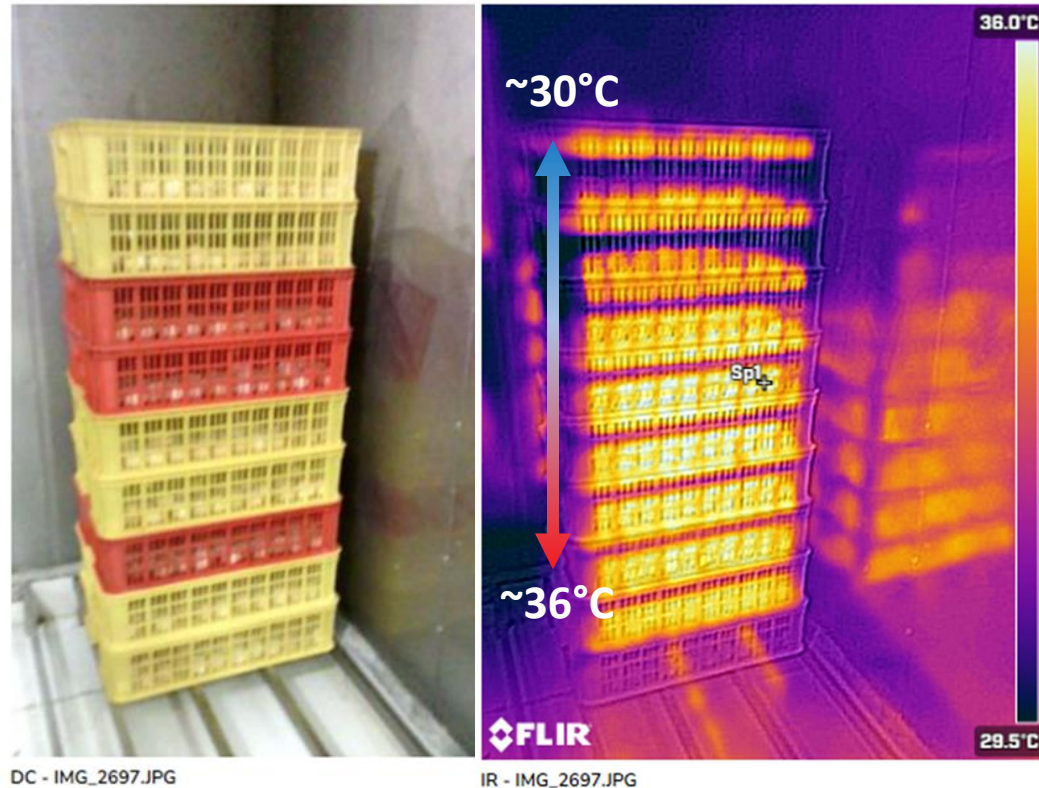


DC - IMG_2488.JPG



IR - IMG_2488.JPG

Details - Transfer temperature



Details – Chick holding



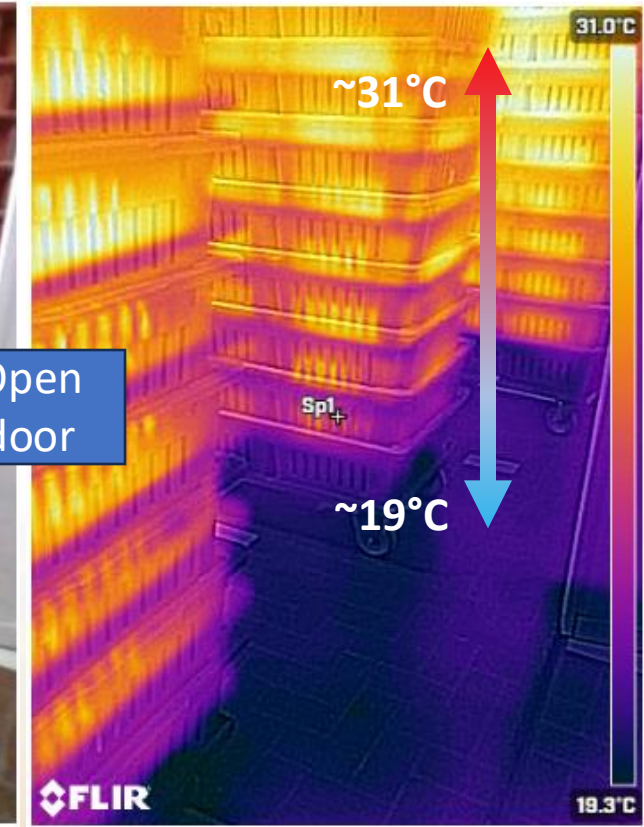
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IR - IMG_2014.JPG

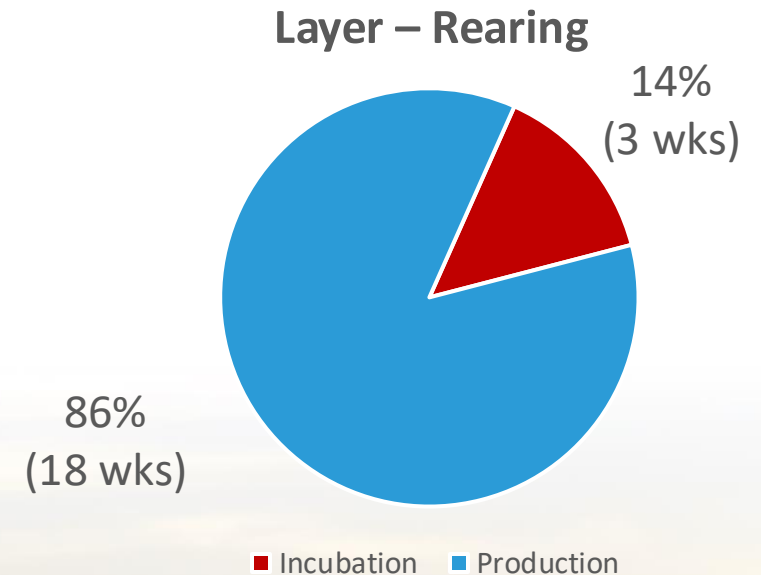
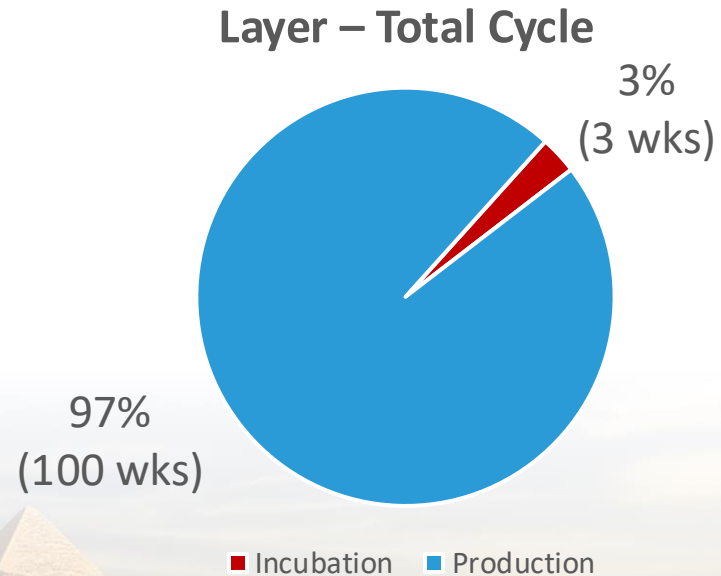
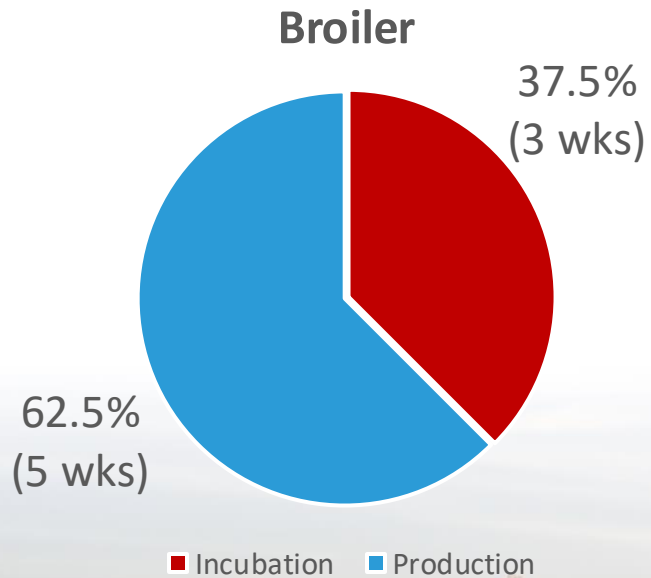


DC - IMG_0832.JPG

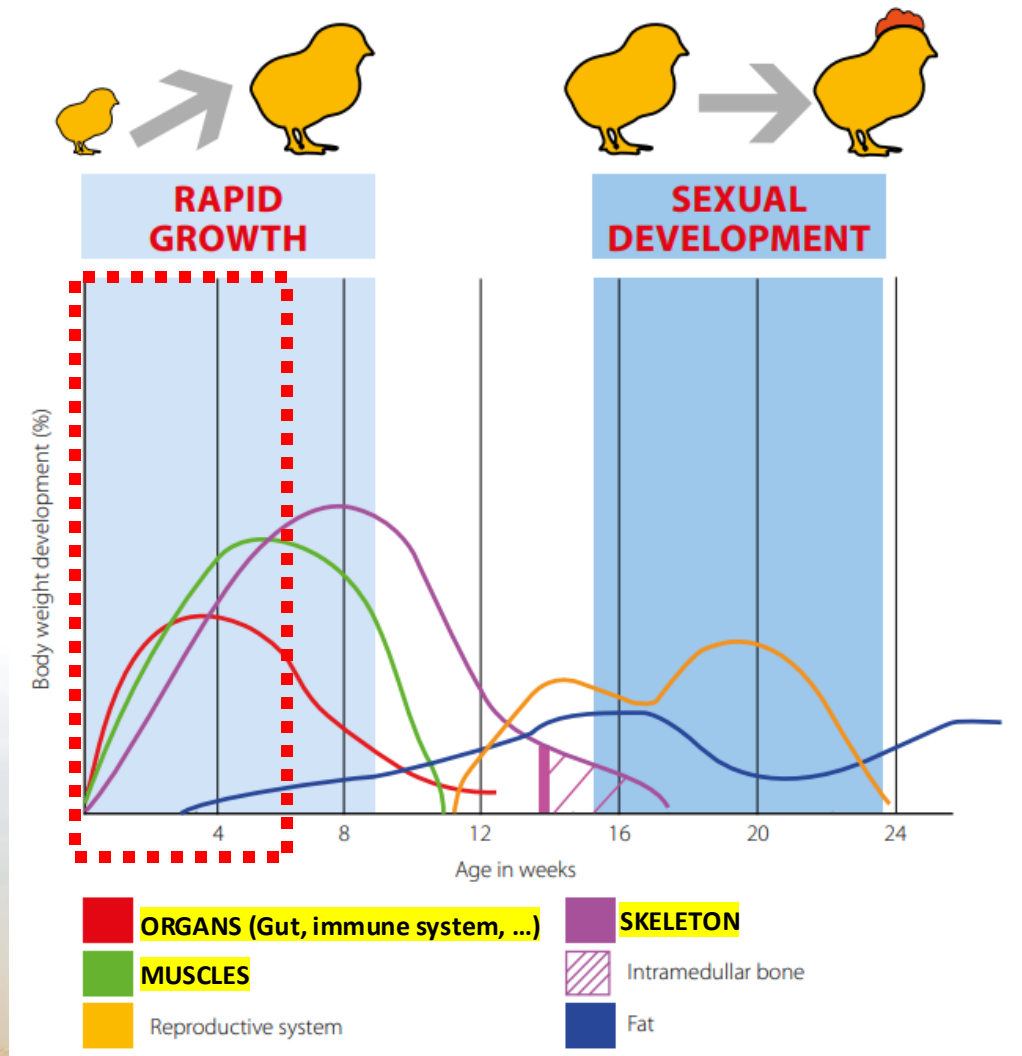


IR - IMG_0832.JPG

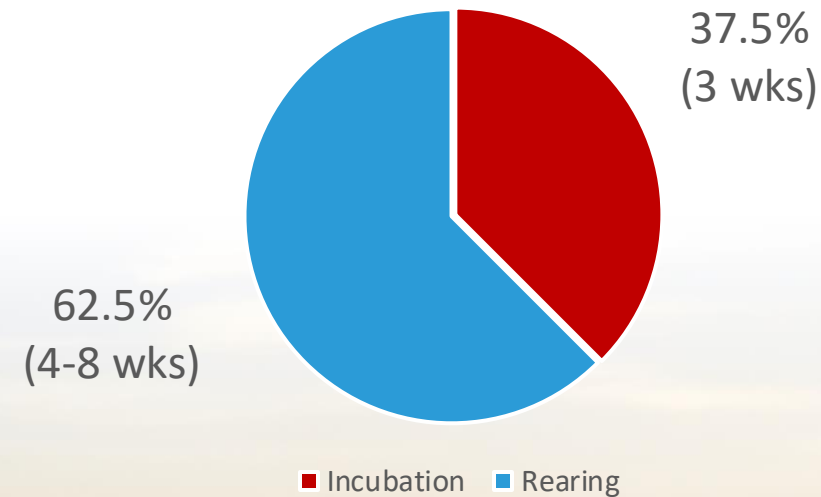
Impact of incubation on chick quality



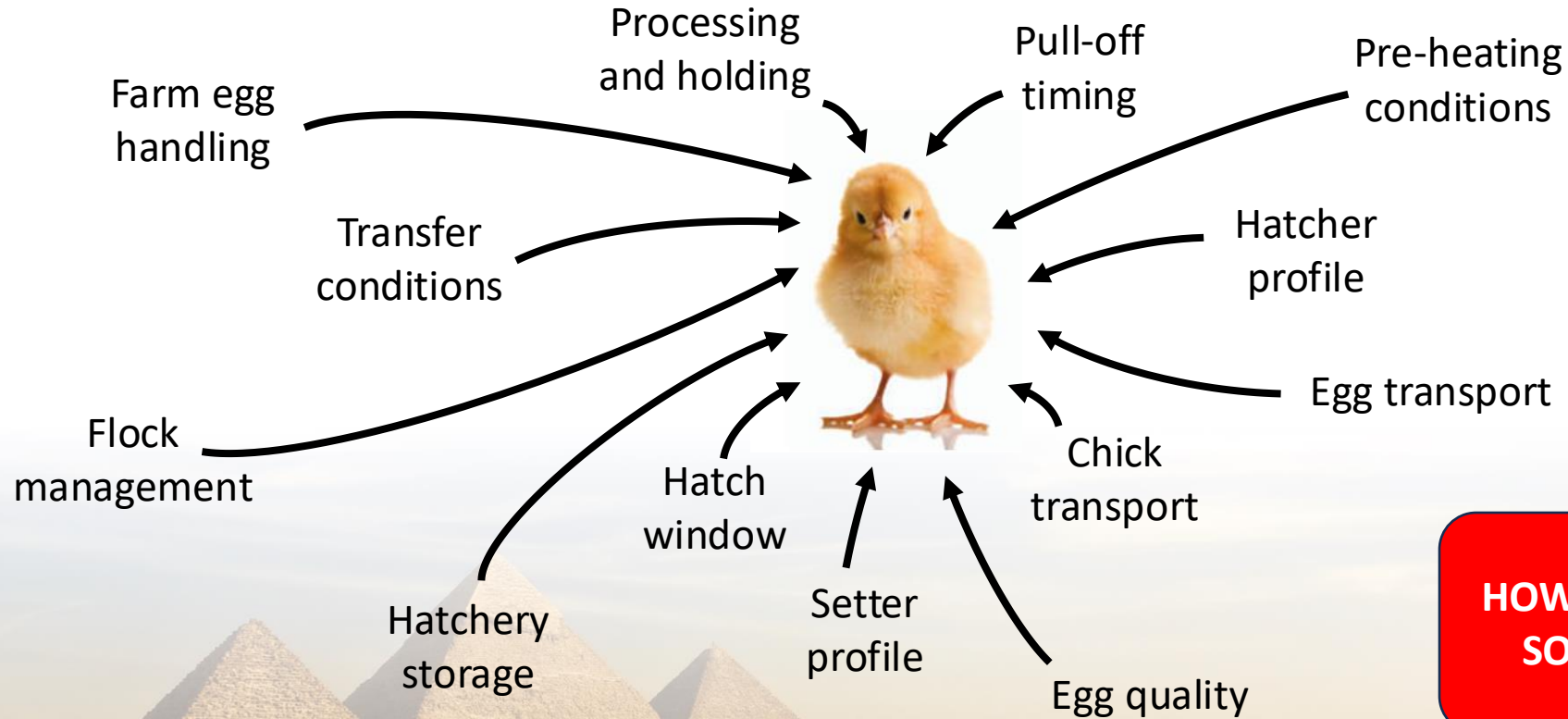
Not as much time as you think...



Broiler LAYER – EARLY Rearing



Factors influencing chick quality



**HOW CAN WE MONITOR
SO MANY FACTORS?**

Hatchery Operations & Procedures Analysis

1. Egg Collection & Storage				
Nr	Recommendation	Yes	No	Details & Comments
1.1	Hatching eggs are collected frequently at farm (specify if automated or manual 3-4x day).			
1.2	Dedicated trucks with cooling capacity are used for hatching egg transport.			
1.3	Eggs are fumigated at farm or at hatchery on arrival. If so, detail chemicals used and procedure (time, temperature, etc...).			
1.4	Floor/reject eggs are not sent to the hatchery. If yes, detail procedures for keeping these eggs separate and if they are used for hatching.			
1.5	Overall impression of hatching egg quality is good (clean, uniform, etc...)			
1.6	Egg storage temperature & duration fall roughly within the guidelines (if not, record conditions).			
	DAYS	TEMP	%RH	
	0-3 d	18-21°C (64.4-69.8°F)	75-85%	
	4-7 d	15-17°C (59-62.6°F)	75-85%	
	8-10 d	13-15°C (55.4-69.0°F)	80-85%	
	>10 d	12-14°C (53.6-57.2°F)	80-85%	
1.7	Does egg storage time exceed 7-10 days? If so, detail procedures used to maintain quality (SPIDES, turning, etc..)			



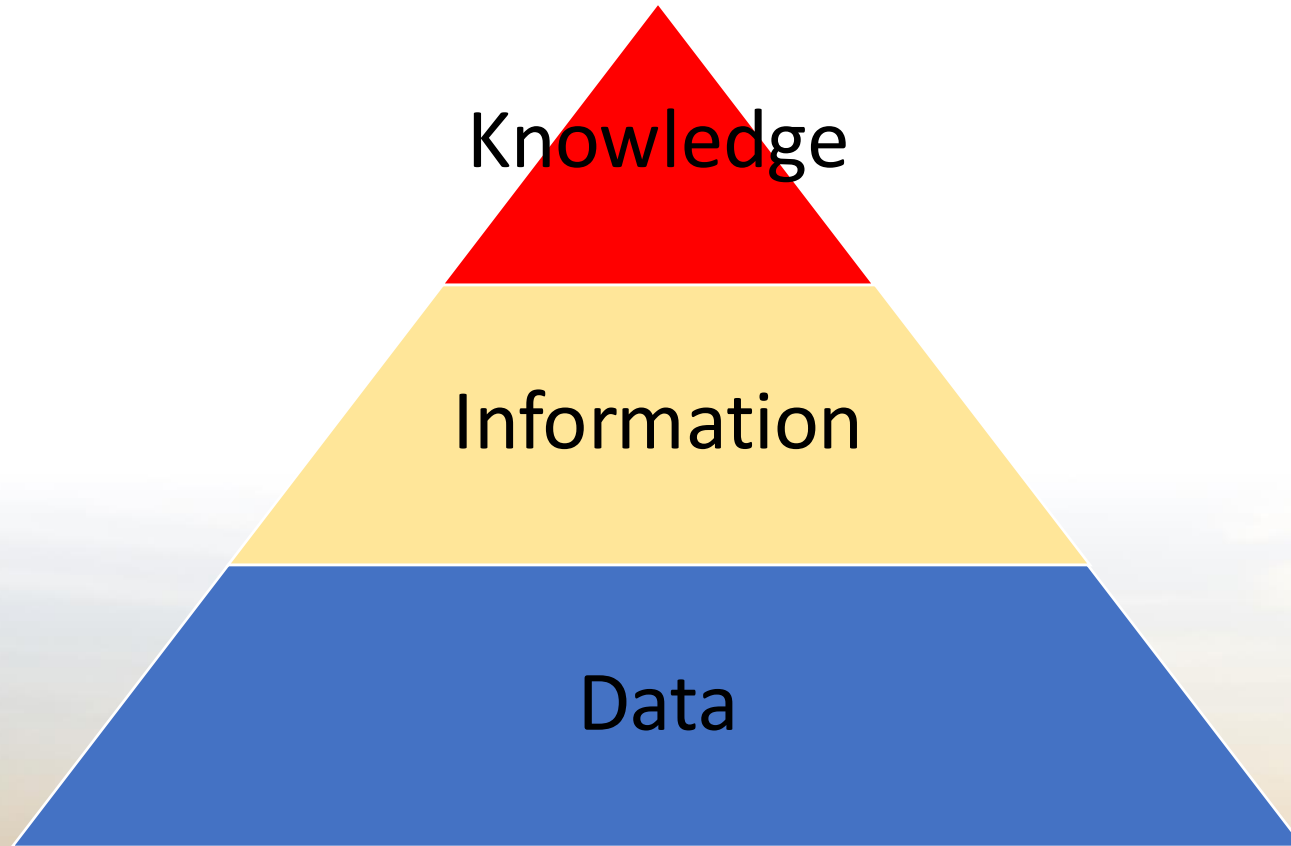
Hatchery Operations & Procedures Analysis

HATCHERY KEY FINDINGS AND SUGGESTIONS/ACTION ITEMS	
Findings that are critical issues and require urgent attention:	
	Change fumigation program for egg receiving (current program is increasing early embryo mortality)
	Improve incoming egg quality and hygiene (better selection at farm)
Findings that are important, but less urgent or impactful:	
	Increase daily machine checks from 1x day to 3x day
	Replace thermometer in setter room bay
Findings that are positive, good practices, or improvements:	
	Chicks in processing and holding areas were comfortable, good conditions
Previous suggestions that were not implemented:	
	Addition of fans to egg room for temperature uniformity (ordered – waiting for delivery)

QUALITY – Measurement is critical

- A key finding in many hatchery audits is the lack of quality checks
 - Temperature loggers
 - % Water loss at transfer
 - Eggshell temperature
 - % Chick yield
 - Monitoring hatch window
 - Chick body temperature
 - PASGAR score
 - Breakouts
- Implement quality checks throughout the process
 - Early alert for potential problems
 - Improves trouble shooting
- MEASURE → MONITOR → MANAGE

End goal of data: make informed decisions

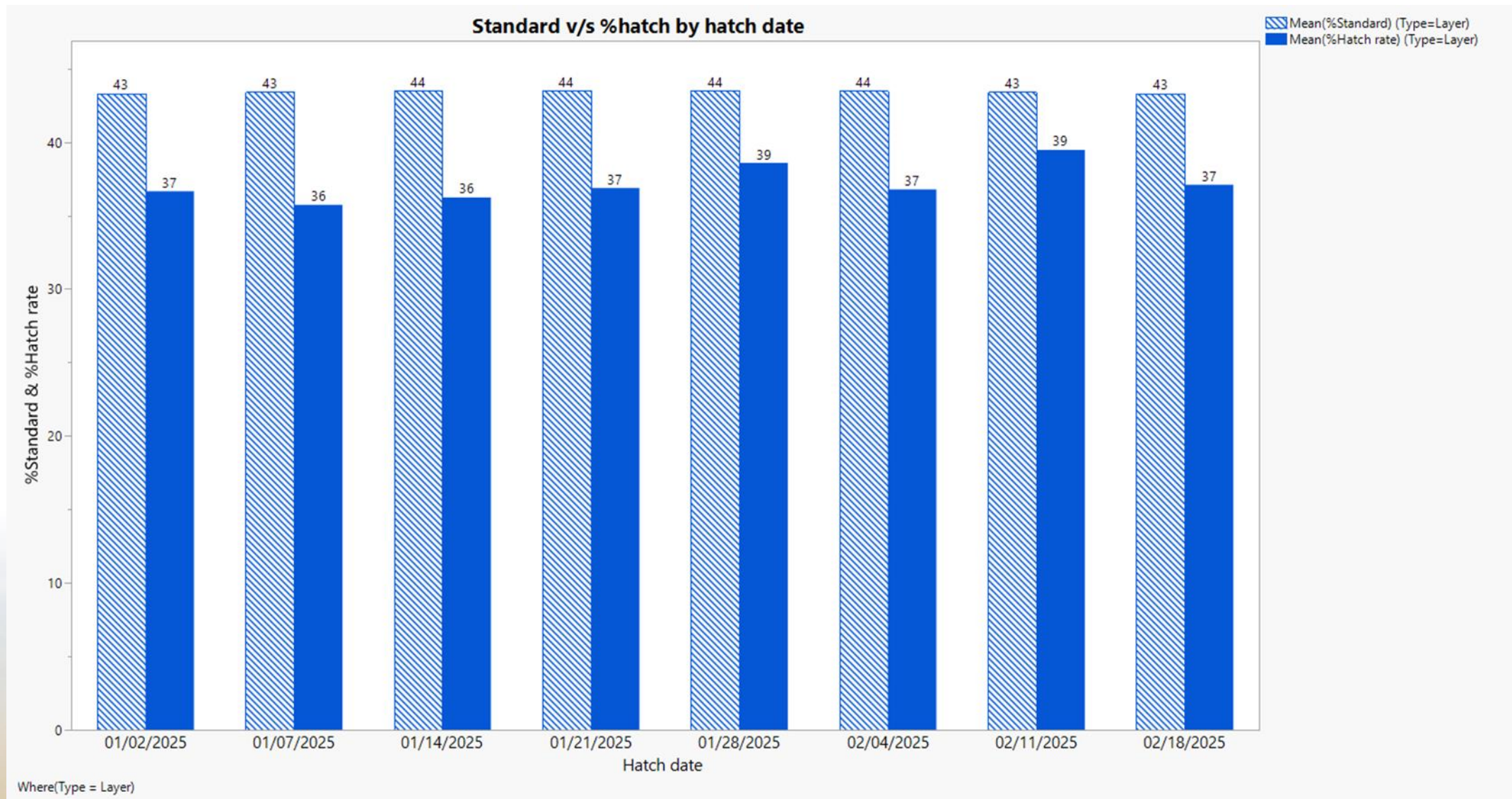


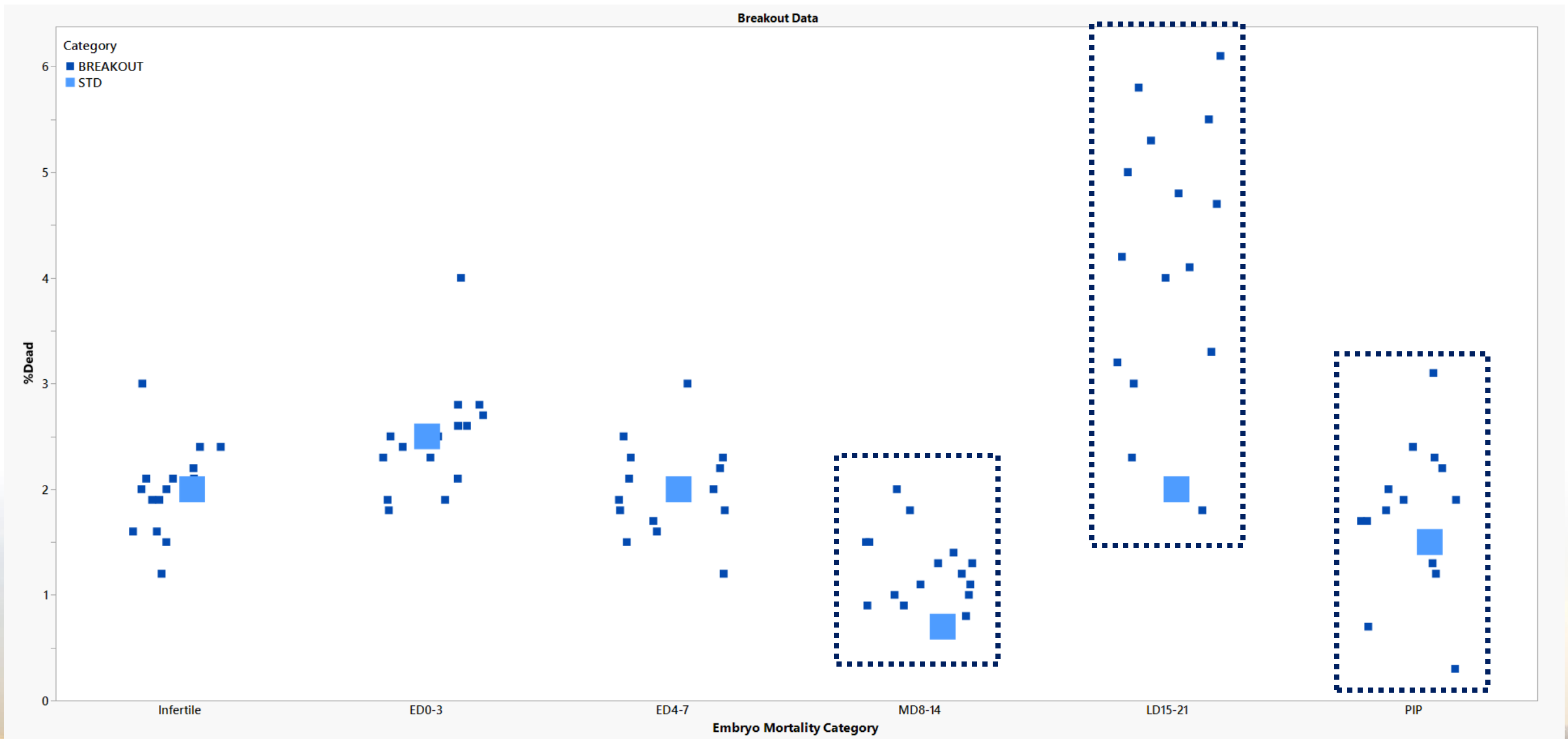
- Change storage practices for >7d eggs?
- Adjust setter profile %RH?
- Egg temperature = embryo mortality?

- Egg age : % Culls
- % Water loss : % Hatch
- Egg temperature : Breakouts

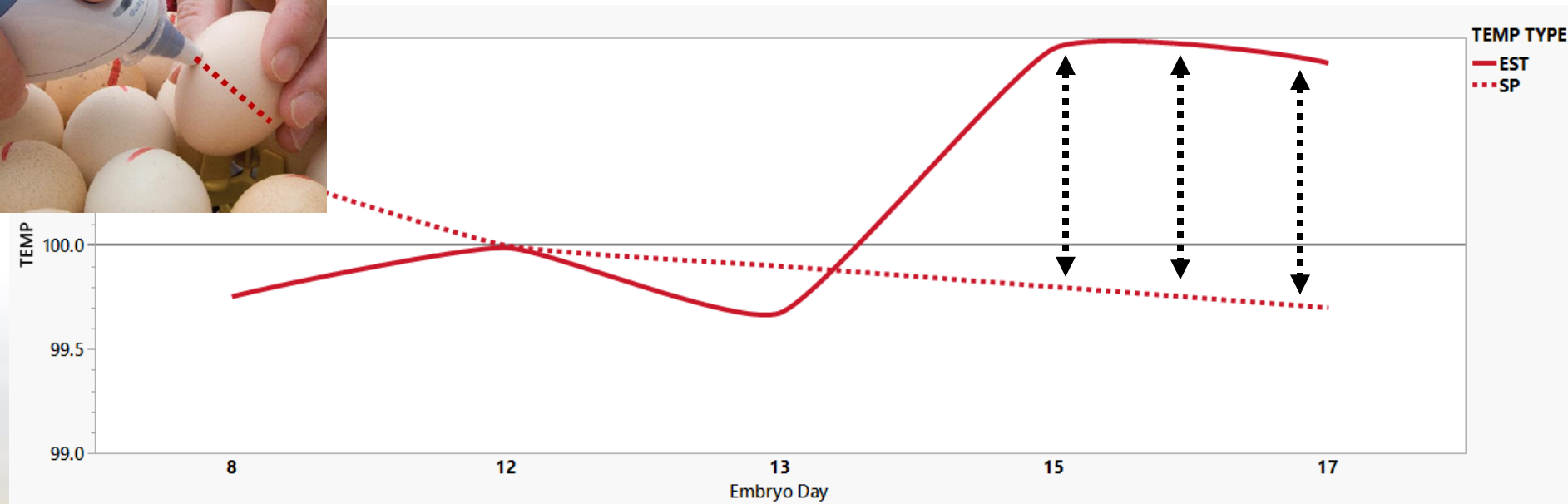
- %Hatch
- Egg temperature
- Storage age
- %Culls
- %Water loss
- Breakouts



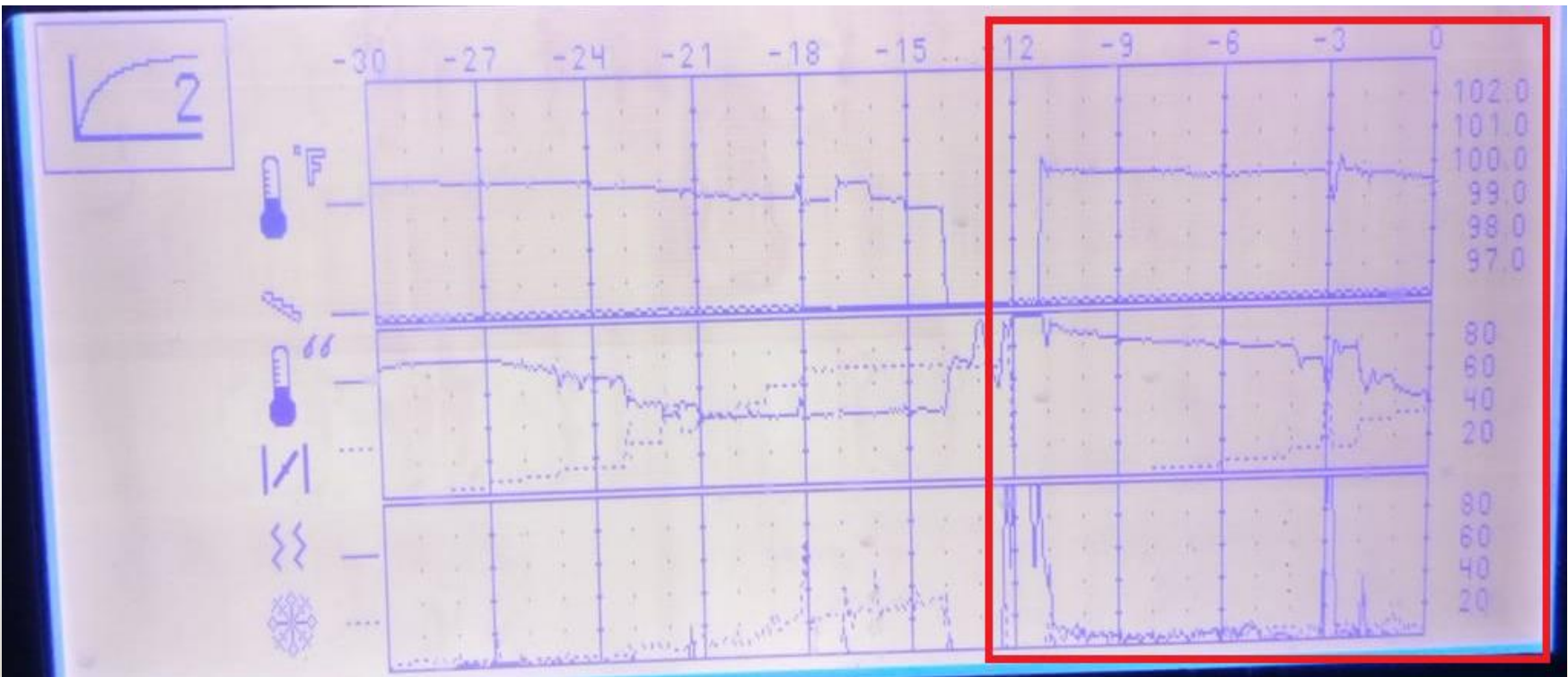




Embryo temperature $\neq$ machine temperature



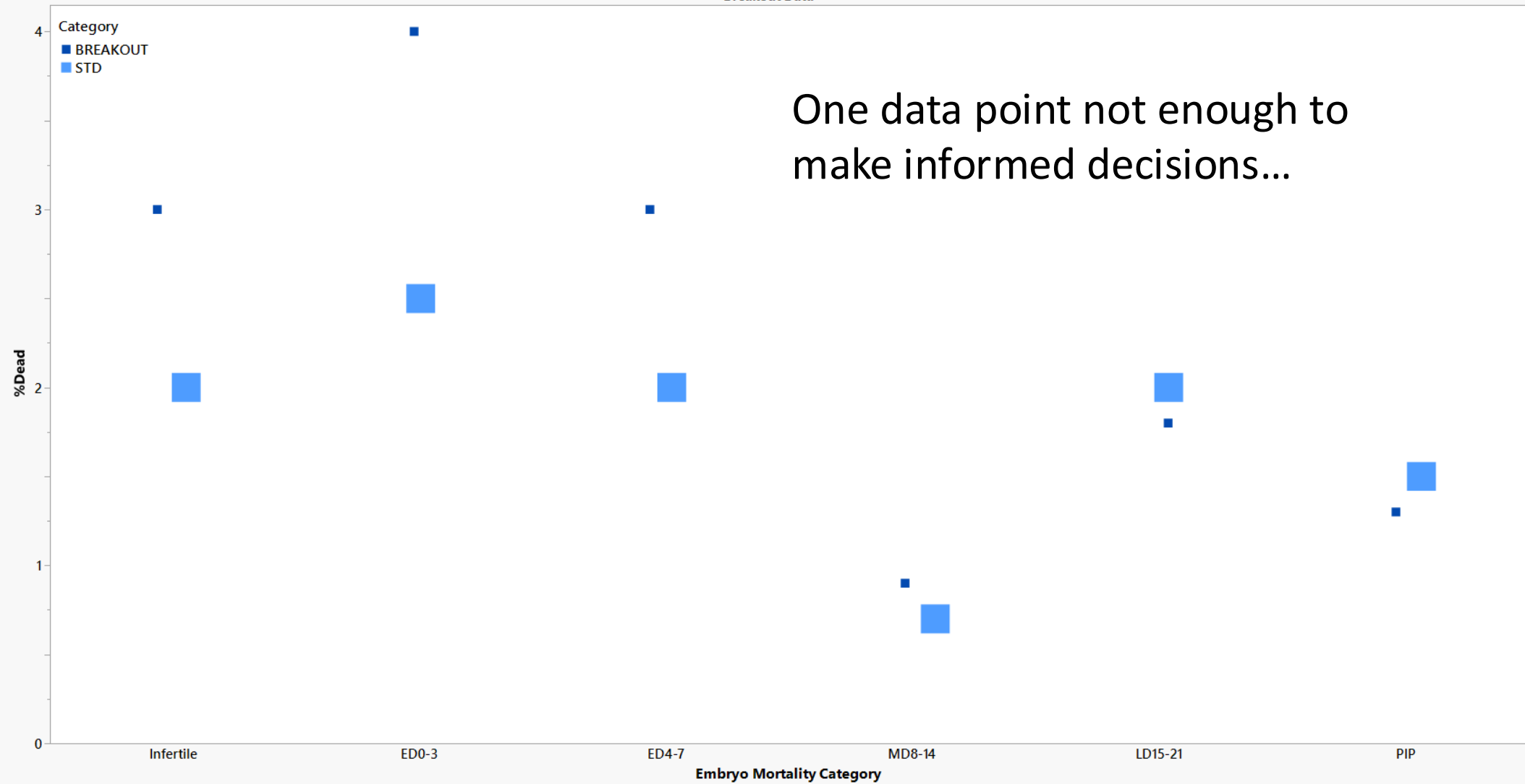
Adjust and monitor – data become action!



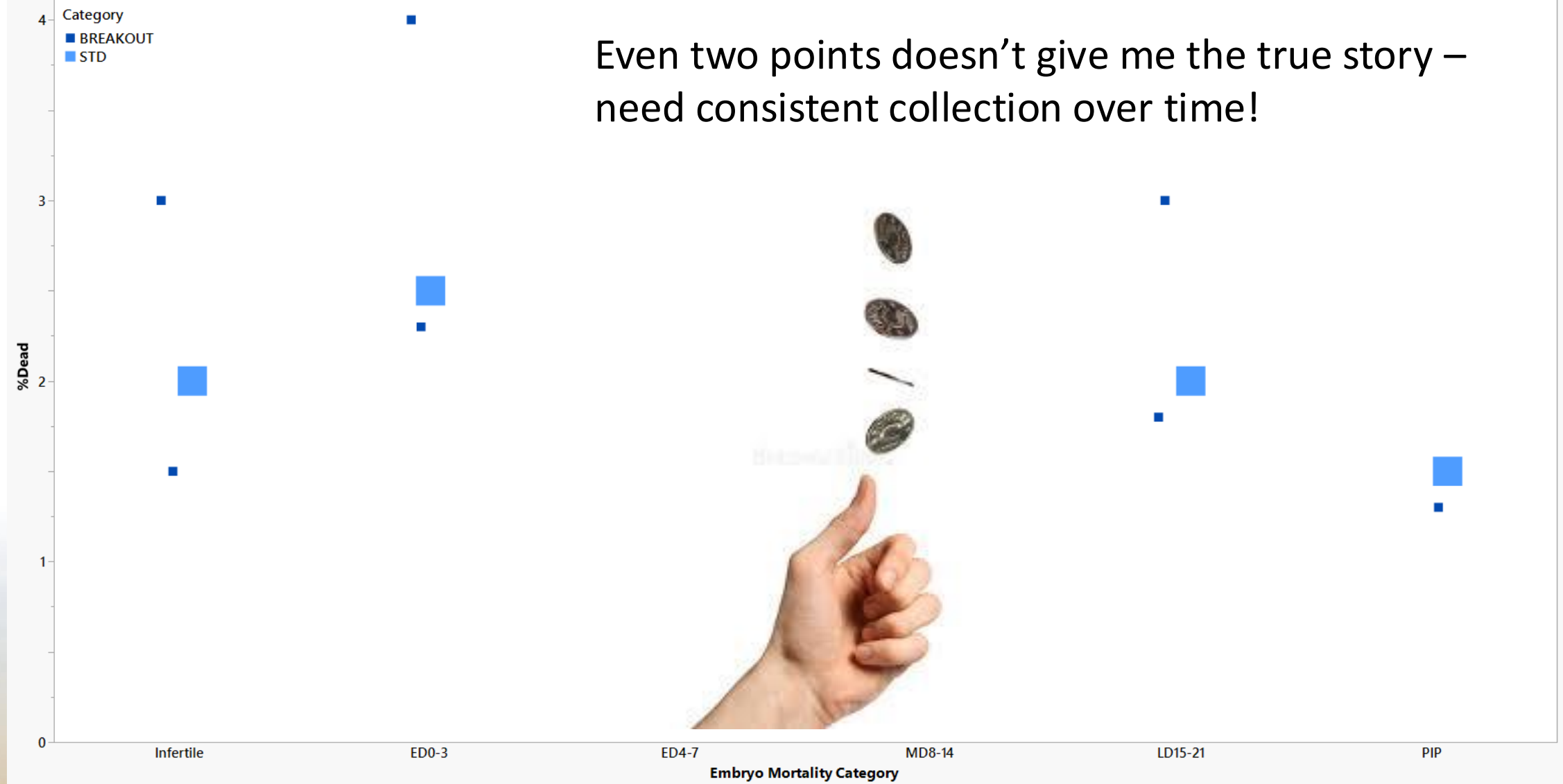
910(91.8)

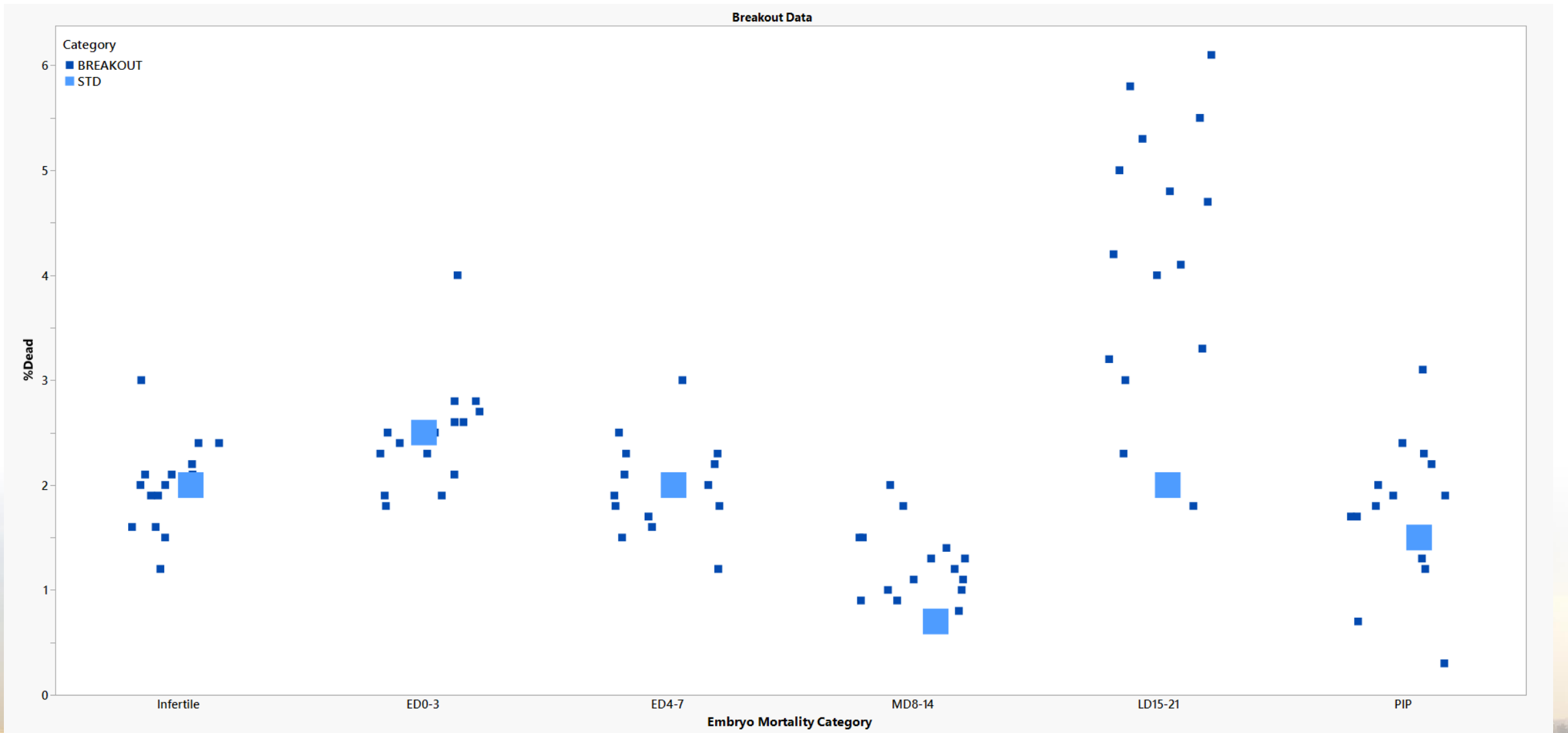
Incubateur I		
1	100.1	100.1
2	100.1	100.3
3	100.3	100.0
4	100.2	100.1
5	100.4	100.1
6	100.1	100.0
T° M.	100.1	
Ajust.		

Breakout Data

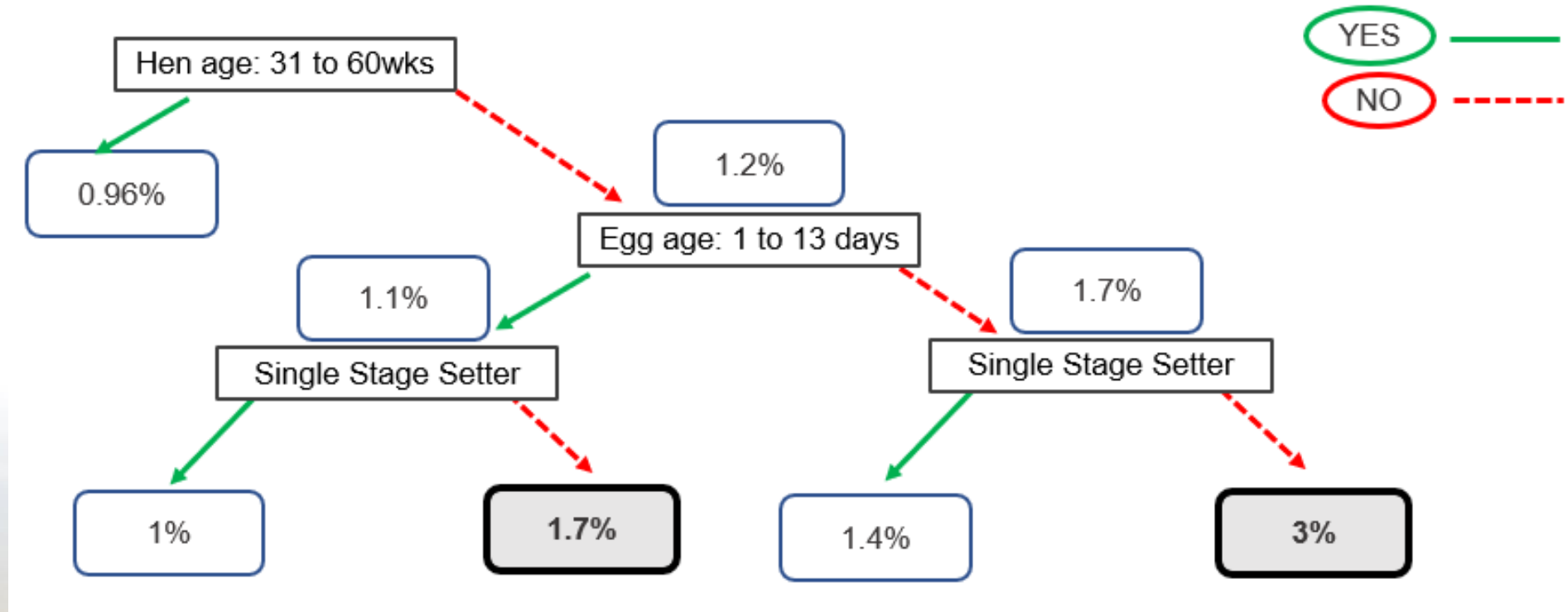


Even two points doesn't give me the true story – need consistent collection over time!





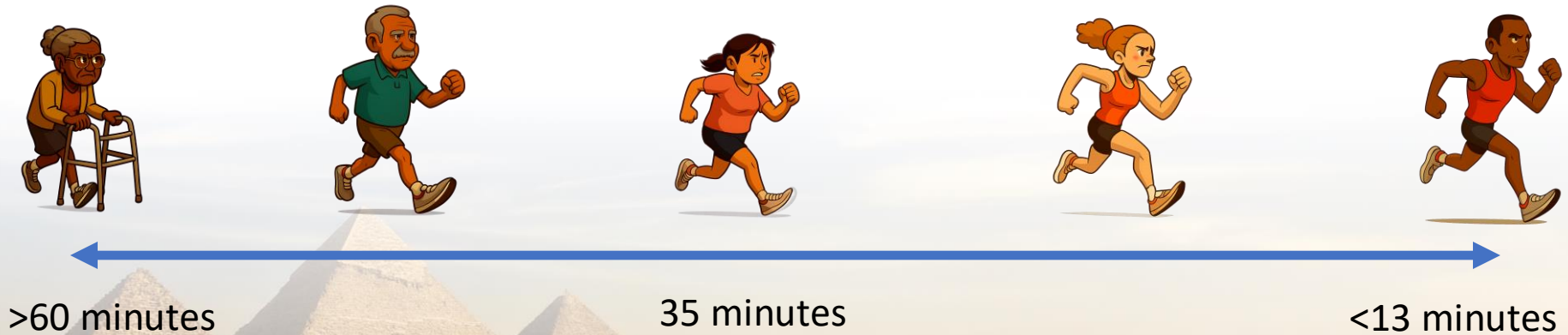
More data = potential for data mining....



(Adapted from Grochowska et al., 2019)

Importance of in-house breakout standard:

- “Standard” time for a 5K run: 35 minutes

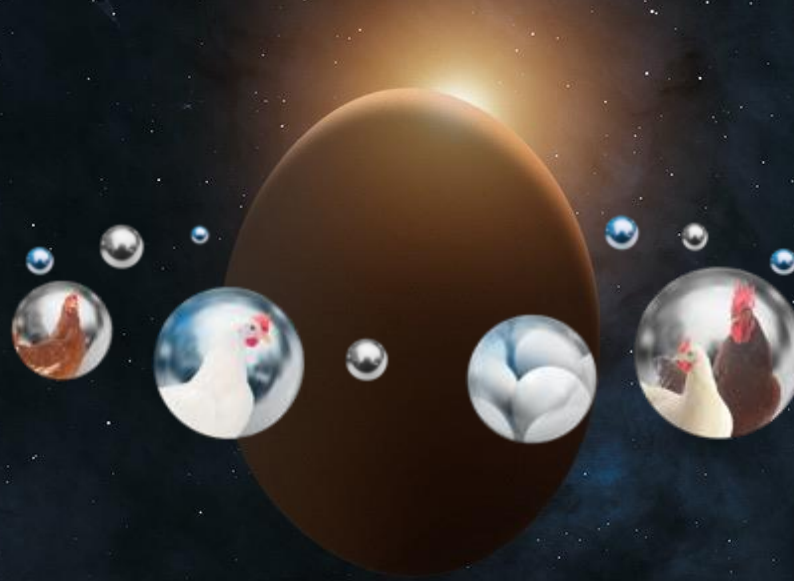


How can I help your hatchery?

- Diagnose **DETAILS** that may be costing your operation %hatch
- Create protocols to help track and measure **QUALITY** for benchmarking
- Build practices to collect **DATA** and begin analysis to improve troubleshooting and identify opportunities for improvement
- Also...
 - Performance audit
 - Breakout training
 - PASGAR scoring
 - Hatchery design (new/renovations)
 - Virtual troubleshooting
 - SPIDES program
 - Machine profile development



○ Thank you for your attention



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Transforming data into information...

- Several other data points:
 - Higher than expected %weight loss at transfer (~14%)
 - Malformations occur with worst hatches, but not always
 - Hatch is sometimes early, despite long egg storage
- Troubleshooting focus TEMPERATURE!
 - Check machines are correctly calibrated
 - Measure eggshell temperature (not always equal to set point)
 - Adjust and monitor machine profile if needed