

1 **Using brains not brawns: adding value to your practice with data**

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2 3 4 **Why use our brain?**

- ▶ 93% of veterinarians surveyed (750/806) reported injury during the last 5 years (Epp 2012)
 - ▶ Types of injuries for Food Animal Practitioners:
 - ▶ Back strain 19%, Limb strain: 23%, Head injury: 6%, Crushed/kicked/trampled: 31%
- ▶ 77% (729/949) had experienced pain associated with rectal palpation (Sander 2017)
- ▶ 15.7% (144/918) were injured from lifting heavy object with 50% (n=72) of those requiring medical attention (Sander 2017)

5 6 **Iowa Veterinary Practice Act**

- ▶ 169.4 License requirement and exceptions. A person may not practice veterinary medicine in the state who is not a licensed veterinarian or the holder of a valid temporary permit issued by the board. This chapter shall not be construed to prohibit:
 - ▶ To diagnose, treat, correct, change, relieve or prevent, for a fee, any animal disease, deformity, defect, injury or other physical or mental conditions or cosmetic surgery; including the prescription or administration of any drug, medicine, biologic, apparatus, application, anesthetic, or other therapeutic or diagnostic substance or technique, for a fee; or to evaluate or correct sterility or infertility, for a fee; or to render, advise or recommend with regard to any of the above for a fee

7 8 **Chute Side Records**9 **Weight**

- ▶ Weaning weight impacts bottom dollar
 - ▶ Health strategies to increase weaning weight
 - ▶ Implant strategies
 - ▶ ID growth characteristics
 - ▶ Nutrition strategies
 - ▶ Purebred data
- ▶ Adult
 - ▶ Breeding decisions
 - ▶ Nutrition
 - ▶ Ensure correct dosing
 - ▶
 - ▶

10 11

12 13 14 **Excel Functions**

- ▶ Lightest weight
 - ▶ =min(highlight cells)
 - ▶ ex: =min(B2:B238)
- ▶ Heaviest Weight
 - ▶ =max(Highlight cells)
 - ▶ Ex: =max(B2:B238)
- ▶ Average weight
 - ▶ =average(Highlight cells)
 - ▶ Ex: =average(B2:B238)
- ▶ Chart
 - ▶ Highlight weights and IDs
 - ▶ Select chart and histogram
 - ▶

15 **Economics**

- ▶ Professional service time
 - ▶ Initial set up is the investment cost
 - ▶ Goes quicker once sheet is set up
- ▶ Technician time
- ▶ Rental agreements for the scale as \$/hd
 - ▶ More liability
 - ▶ No doctor needed

16 **Body Condition Score**

- ▶ Does the weight match the frame score?
- ▶ Reproductive hormonal levels are affected by condition
- ▶ Cost of feed

17 **Body Condition Score**18 **Body Condition Score**19 **Excel Functions**

- ▶ Same as weight for average
- ▶ Graph
 - ▶ Highlight cells for BCS
 - ▶ Select Bar Graph chart

20 **Economics**

- ▶ Equipment: Free
- ▶ Professional services

21 **Reproductive Measurements**

- ▶ Frame score

- ▶ Identify outliers
- ▶ Feed cost impact
- ▶ Pelvic measurement
 - ▶ Identify outliers or average
 - ▶ Dystocia management
- ▶ Reproductive tract score
 - ▶ Ensure heifers are cycling prior to synchronization
 - ▶ Check point for development program
- ▶ Pregnancy diagnosis
 - ▶ Estimated calving date
 - ▶ Identify open

22 **Frame Score**

- ▶ Tape measure to ground
- ▶ Hip height in inches
 - ▶ ADJ hip height=tape measure-hip height
- ▶ Hip height in cm
 - ▶ =CONVERT(hip height in inches,"in","cm")
- ▶ Frame Score: (BIF frame score)
 - ▶ $(0.4723 * \text{hip height in cm}) - 0.0239 * \text{age of hip height} + 0.0000146 * \text{age} * \text{age} + 0.0000759 * \text{hip height in cm} * \text{age} - 11.7086$

23

24 **Frame Score**

- ▶ Equipment
 - ▶ Tape measure and zip ties or duct tape
 - ▶ Frame score stick
 - ▶ Frame score board

▶

25 **Pelvic Measurement**

26 **Pelvic measurement-Scenario 1**

27 **Pelvic measurement-Scenario 1**

28 **Pelvic measurement- Scenario 2**

29 **Pelvic measurement- Scenario 2**

30 **Pelvic measurement- Scenario 3**

31 **Pelvic measurement- Scenario 3**

32 **Pelvic Measurement**

- ▶ Initial sheet is chute side worksheet
- ▶ Pelvic area
 - ▶ $= (\text{pelvic height} * \text{pelvic width})$

- ▶ Pelvic area/calf deliverable birth weight ratio
 - ▶ =If(AND(Pelvic area \geq 500, Pelvic area \leq 599),"2", If(AND(Pelvic area \geq 600, Pelvic area \leq 699),"2.1", If(AND(Pelvic area \geq 700, Pelvic area \leq 799),"2.2", If(AND(Pelvic area \geq 800, Pelvic area \leq 899),"2.3", If(AND(Pelvic area \geq 900, Pelvic area \leq 999),"2.4", If(AND(Pelvic area \geq 1000, Pelvic area \leq 1099),"2.5",))))))
- ▶ Calf deliverable weight
 - ▶ =Pelvic area/(pelvic area/calf birthweight ratio)

33 Pelvic Measurement

- ▶ Equipment
 - ▶ Pelvimeter

34 Reproductive Tract Score

35 Reproductive Tract Score

36 Reproductive Tract Score

- ▶ Reproductive Tract Score Left and Right
 - ▶ =If(AND(RTS=0),"1", If(AND(RTS \geq 1, RTS \leq 8),"2", If(AND(RTS \geq 8.1, RTS \leq 10),"3", If(AND(RTS \geq 10.1),"4", If(AND(RTS=CL),"5",))))))
 - ▶ Go with the larger score

37 Reproductive Tract Score

- ▶ Equipment
 - ▶ Ultrasound or manual palpation

38 Pregnancy Diagnosis

39 Pregnancy Diagnosis

40

41 Pregnancy Diagnosis

- ▶ Estimated due date
 - ▶ =date preg checked–(days called pregnant)+282
- ▶ 21 day cycle
 - ▶ 1st 21=first start date+21
 - ▶ 2nd 21=first start+42
 - ▶ 3rd 21=first start+63
- ▶ Percentages
 - ▶ =numerator/denominator
 - ▶ Click on percent sign

42 Pregnancy Diagnosis

- ▶ Equipment: Ultrasound or manual palpation
 - ▶ Ultrasound Pros:
 - ▶ Fetal sexing

- ▶ Fetal staging
- ▶ Confirmation of viability
- ▶ Confirmation of normal presentation

43 **Nutrition**44 **Nutrition**45 **Nutrition**46 **Nutrition**47 **Nutrition**

- ▶ BRANDS by Iowa Beef Center and Garland Dahlke
 - ▶ \$525
- ▶ Penn State Separator spreadsheet
- ▶ Photos speak 1000 words
- ▶ Stopwatch to record mixing time

48 **Nutrition**

- ▶ Equipment:
 - ▶ Garland Dahlke... but really...
 - ▶ BRANDS
 - ▶ Computer
 - ▶ Shaker boxes
 - ▶ +/- Stopwatch

49 **Pivot Tables**

- ▶ Insert Pivot table by highlighting data and selecting pivot table
- ▶ Sort any column by any column
 - ▶ Example: Age of cow by count pregnant yes or no by body condition score
 - ▶
 - ▶
 - ▶
 - ▶
 - ▶
- ▶ Analyze information by Pivot Chart

50 **Pivot Tables**51 **Excel vs. Numbers**

- ▶ If you are utilizing an iPad
- ▶ Going from Numbers to Microsoft Excel
 - ▶ Click on share button
 - ▶ Click on Export To Excel
 - ▶ Then send to computer
- ▶ Benefits of Numbers:

- ▶ Automatic save even on farm
- ▶ Free program with apple

52 **Protocols**

- ▶ Legal written document
- ▶ Allows producers to make decisions on farm without veterinarian onsite but with preconceived acknowledgement
- ▶ Everchanging!!!!
- ▶ Not all protocols are the same
- ▶ Common things happen commonly
- ▶ Prevention IS Production Medicine

53 **Protocols**

54 **Protocols**

- ▶ Initiation can be time consuming
- ▶ After that plug and chug
- ▶ Professional services time

55 **References**

- ▶ Epp T, Waldner C. Occupational health hazards in veterinary medicine: physical phycological, and chemical hazards. *Can vet J* 2012;53:151-157
- ▶ Saunder WE, Raizman EA, Humphrey CS, et al. Prevalence and associated factors of injury in bovine practitioners in the United States and Canada. *Bovine Practitioner* 2017
- ▶ Anderson KJ, Lefever DG, Brinks JS, Odde KG. The use of reproductive tract scoring in beef heifers. *Agri-Practice* 1991;1991(12);19-26.
- ▶

56 **Questions**

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