

# **A SUMMARY OF OVER 400 RA/HMP: WHAT CAN THEY TELL US?**

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# TWO CRITICAL QUESTIONS

- How much does having Johne's disease impact my herd?
- If Johne's disease has a significant impact, what can I do about it?



# HERD INFORMATION (DAIRY)

WSDA Johne's Disease Risk Assessment 1.0 (Dairy)

**Herd Information**

Assessment code:       Assessment date:

First name:       Last name:       Veterinarian phone:

**Vaccination Program**

| Vaccines in heifers                         | Vaccines in cows                            |
|---|---|
| <input type="checkbox"/> Clostridial        | <input type="checkbox"/> Clostridial        |
| <input type="checkbox"/> MLV respiratory    | <input type="checkbox"/> MLV respiratory    |
| <input type="checkbox"/> Killed respiratory | <input type="checkbox"/> Killed respiratory |
| <input type="checkbox"/> Leptospirosis      | <input type="checkbox"/> Leptospirosis      |
| <input type="checkbox"/> Vibriosis          | <input type="checkbox"/> Vibriosis          |
| <input type="checkbox"/> Other              | <input type="checkbox"/> Other              |

**Johne's Case Information (last 12 months)**

| Category                  | Lac 1 | Lac 2 | Lac 3+ |
|---------------------------|-------|-------|--------|
| <b>Clinical JD cases</b>  | 1     | 8     | 10     |
| <b>Cattle culled</b>      | 129   | 97    | 118    |
| <b># Culture positive</b> | 0     | 0     | 0      |
| <b># ELISA positive</b>   | 2     | 17    | 32     |

**Dairy Inventory**

Number of milking cows .....

Number of dry cows .....

Number of bred heifers .....

Number of virgin heifers .....

Number of bulls .....

**Animal Sourcing**

| Source for replacements                   | Source for additions                      |
|---|---|
| <input type="checkbox"/> Home raised      | <input type="checkbox"/> Home raised      |
| <input type="checkbox"/> Dealer           | <input type="checkbox"/> Dealer           |
| <input type="checkbox"/> Market           | <input type="checkbox"/> Market           |
| <input type="checkbox"/> Single dairy     | <input type="checkbox"/> Single dairy     |
| <input type="checkbox"/> Multiple dairies | <input type="checkbox"/> Multiple dairies |
| <input type="checkbox"/> Other            | <input type="checkbox"/> Other            |

**New Addition Information (last 12 months)**

| Group          | Number | Seller JD Status |
|----------------|--------|------------------|
| <b>Cows</b>    | 15     | 1                |
| <b>Heifers</b> | 100    | 1                |
| <b>Other</b>   | 10     | 1                |

**Herd Performance**

Current milk per cow per day (lbs) .....

Current % milk fat .....

Current % milk protein .....

Target milk per cow per day (lbs) .....

Target % milk fat .....

Target % milk protein .....

**Johne's History**

What year was herd started .....

Time since newest addition .....

Year of first JD case .....

Source of first JD case .....

Source of youngest JD case .....

Age of youngest JD case .....

Date of youngest JD case .....

**New Addition Information (1-5 years ago)**

| Group          | Number | Seller JD Status |
|----------------|--------|------------------|
| <b>Cows</b>    | 50     | 0                |
| <b>Heifers</b> | 418    | 0                |
| <b>Other</b>   | 39     | 0                |

**Johne's Disease Prevalence Estimate**

# HEALTH STATUS (DAIRY)

## WSDA Johne's Disease Risk Assessment 1.0 (Dairy)



Herd Information | **Health Status** | Risk Factors | Summary | Ranking

### Calf Feeding Practices

Average hours to first colostrum ..... 6

Quarts of first colostrum fed ..... 3

Is colostrum pooled ..... No

Number of colostrum feedings ..... 1

Other feeds fed ..... **Unpasteurized milk**  
Pasteurized milk  
Milk replacer

### Milk Quality And Udder Health

Bulk tank SCC (1000's) ..... 200 - 300

Bulk tank SPC ..... < 100

Mastitis cases per month ..... 1.0 - 1.5%

Cultured organisms ... **Staph. aureus**  
Non-aureus staph  
Environ. strep.  
Mycoplasma  
Coliforms

### Infectious Disease Incidence

Salmonellosis ..... Low

Bovine viral diarrhea ..... Low

Respiratory disease ..... Low

Clostridial disease ..... Low

Leptospirosis ..... Low

Other infectious disease ..... Low

### Calf Disease Incidence

Prewearing mortality (%) ..... 6

Is calf vigor satisfactory ..... Yes

Is calf growth satisfactory ..... Yes

Scours incidence ..... Low

Pneumonia incidence ..... Moderate

Other incidence ..... Low

### Reproductive Program

Heat detection rate (%) ..... 41

Conception rate (%) ..... 30

Pregnancy rate (%) ..... 12

Herd average DIM ..... 185

Abortions / year (% herd) ..... 8

Method of insemination ..... Both

### Mngt Disease Incidence (Last 6 months)

Milk fever ..... Low

Retained placentas ..... Low

Ketosis / DA's ..... Low

Mastitis ..... Low

Metritis ..... Low

Other management disease ... Low

### Heifer Disease Incidence

Is heifer growth satisfactory ..... Yes

Age at freshening (months) ..... 25

Is reproduction satisfactory ..... Yes

Pneumonia incidence ..... Low

Foot wart incidence ..... Moderate

Coccidiosis incidence ..... Low

### Lameness Incidence

Foot trimming frequency ..... Weekly

Foot wart incidence ..... Moderate

Laminitis incidence ..... Low

Abscess incidence ..... Unknown

Foot rot incidence ..... Unknown

Other lameness incidence ..... Low

### Removal Rates (Last 6 months)

Removed < 60 DIM ..... Low

Removed due to dying ..... Low

Removed due to mastitis ..... Low

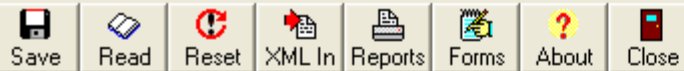
Removed due to repro ..... Low

Removed due to lameness ..... Low

Removed due to low milk ..... Low

# RISK FACTORS (DAIRY)

## WSDA Johne's Disease Risk Assessment 1.0 (Dairy)



Herd Information | Health Status | Risk Factors | Summary | Ranking

### Calving Area Risk Factors

- Stocking density (single cow => densely crowded group) ..... 5
- Manure build up risk for calf ingestion (clean dry => dirty wet) ..... 5
- Area also used for sick cows (never => always) ..... 5
- Presence of JD clinicals or suspects (never => always) ..... 5
- Manure soiled udders and / or legs (never => always) ..... 6
- Calves born in other cow areas (never => always) ..... 7
- Time calves stay with dam (< 30 minutes => > 24 hours) ..... 4
- Calves able to nurse dam (never => most or all) ..... 4

### Pre-Weaned Heifer Risk Factors

- Fed pooled colostrum (never / JD negative => high risk cows) ..... 2
- Fed colostrum from individual cow to several cow (as above) ..... 2
- Fed unpasteurized pooled milk (JD negative => high risk cows) ..... 6
- Manure contamination of colostrum or milk (never => frequent) ..... 8
- Manure contamination of feed or water (never => frequent) ..... 8
- Direct cow contact or manure contamination of heifer pen ..... 5

### Cow And Bull Risk Factors

- Manure contamination of feed (never => frequent) ..... 2
- Manure contamination of water (never => frequent) ..... 4
- Direct access to built up / stored manure (never => frequent) ..... 2
- Manure spread on forage / fed same season (never => frequent) ..... 2

### Post-Weaned Heifer Risk Factors

- Direct cow contact or pen contamination (none => always) ..... 4
- Manure contamination of feed (never => frequent) ..... 6
- Manure contamination of water (never => frequent) ..... 6
- Share pasture with cows (never => frequent) ..... 3
- Manure spread on forage / fed same season (never => frequent) ..... 3

### Bred Heifer Risk Factors

- Direct cow contact or pen contamination (none => always) ..... 3
- Manure contamination of feed (never => frequent) ..... 4
- Manure contamination of water (never => frequent) ..... 5
- Share pasture with cows (never => frequent) ..... 3
- Manure spread on forage / fed same season (never => frequent) ..... 3

### Sources Of Additions And Replacements (Last 12 Months)

- |   | # Of Animals |
|---|--------------|
| Additions / replacements from Level 2-4 herds             | None         |
| Additions / replacements from Level 1 or pretested herds  | > 50         |
| Additions / replacements from single source, non-tested   | None         |
| Additions / replacements from multiple source, non-tested | None         |

# RISK FACTOR SUMMARY

## RISK ASSESSMENT SUMMARY

| Risk Factor Areas        | Max Score  | Your Score | % Max Score  | % Herd Score  |
|--------------------------|------------|------------|--------------|---------------|
| Calving Area             | 80         | 41         | 51.3%        | 30.1%         |
| Pre-Weaned Heifers       | 60         | 31         | 51.7%        | 22.8%         |
| Weaned Heifers           | 35         | 22         | 62.9%        | 16.2%         |
| Bred Heifers             | 25         | 18         | 72.0%        | 13.2%         |
| Cows And Bulls           | 16         | 10         | 62.5%        | 7.4%          |
| Additions / Replacements | 60         | 14         | 23.3%        | 10.3%         |
| <b>TOTAL</b>             | <b>276</b> | <b>136</b> | <b>49.3%</b> | <b>100.0%</b> |

# MENU CONTROLS

DATA CAN BE SAVED FOR LATER RETRIEVAL



## Johne's Disease Dairy Risk Assessment Report

Assessment Code = Herd\_A, Assessment Date = 4/1/2006

### Risk Assessment Summary

| RISK FACTOR AREA                 | MAX SCORE | YOUR SCORE | % MAX SCORE | % HERD SCORE |
|----------------------------------|-----------|------------|-------------|--------------|
| Calving Area .....               | 80        | 41         | 51.3%       | 30.1%        |
| Pre-Weaned Heifers .....         | 60        | 31         | 51.7%       | 22.8%        |
| Weaned Heifers .....             | 35        | 22         | 62.9%       | 16.2%        |
| Bred Heifers .....               | 25        | 18         | 72.0%       | 13.2%        |
| Cows And Bulls .....             | 16        | 10         | 62.5%       | 7.4%         |
| Additions And Replacements ..... | 60        | 14         | 23.3%       | 10.3%        |
| =====                            |           |            |             |              |
| TOTALS                           | 276       | 136        | 49.3%       | 100.0%       |

### Johne's Disease History

|  |           |
|--|-----------|
| Estimated Johne's disease prevalence .....               | 8%        |
| Clinical cases / number of milking and dry cows .....    | 1.5%      |
| Culture positives / number of milking and dry cows ..... | 0.0%      |
| ELISA positives / number of milking and dry cows .....   | 4.0%      |
| Year herd was started .....                              | 1980-1989 |
| Time since most recent addition .....                    | < 1 month |
| Number of new additions in last year .....               | 125       |
| Year of first Johne's disease case .....                 | 2001      |
| Source of first Johne's disease case .....               | Purchased |
| Source of youngest Johne's disease case .....            | Raised    |
| Age of youngest Johne's disease case .....               | 2-3 years |
| Diagnosis date of youngest Johne's disease case .....    | 8/31/2004 |

## JOHNE'S DAIRY ASSESSMENT HERD INFORMATION FORM

Herd Code: \_\_\_\_\_ Assessment Date: \_\_\_\_\_

### DAIRY INVENTORY

Number of milking cows .....  
 Number of dry cows .....  
 Number of bred heifers .....  
 Number of virgin heifers .....  
 Number of bulls .....

### JOHNE'S HISTORY

Year herd was started .....  
 Time since last purchase .....  
 Year of first JD case .....  
 Source of first JD case .....  
 Source of youngest JD case .....  
 Age of youngest JD case .....  
 Date of youngest JD case .....

### HERD PERFORMANCE

Current milk / cow / day .....  
 Current % milk fat .....  
 Current % milk protein .....  
 Target milk / cow / day .....  
 Target % milk fat .....  
 Target % milk protein .....

### JOHNE'S CASE INFO (Last 12 months)

|                           | Lac 1 | Lac 2 | Lac 3 |
|---------------------------|-------|-------|-------|
| Clinical cases .....      | _____ | _____ | _____ |
| Cattle culled .....       | _____ | _____ | _____ |
| # Culture positives ..... | _____ | _____ | _____ |
| # ELISA positives .....   | _____ | _____ | _____ |

### VACCINATION PROGRAM

*Check those that apply*

|                          | Heifer | Cow   |
|--------------------------|--------|-------|
| Clostridial .....        | _____  | _____ |
| MLV respiratory .....    | _____  | _____ |
| Killed respiratory ..... | _____  | _____ |
| Leptospirosis .....      | _____  | _____ |
| Vibriosis .....          | _____  | _____ |
| Other vaccine .....      | _____  | _____ |

### NEW ADDITION INFO (Last 12 months)

|               | Number | Seller | JD Status |
|---------------|--------|--------|-----------|
| Cows .....    | _____  | Unk    | Neg Pos   |
| Heifers ..... | _____  | Unk    | Neg Pos   |
| Other .....   | _____  | Unk    | Neg Pos   |

### NEW ADDITION INFO (1.5 years ago)

| Number | Seller | JD Status |
|--------|--------|-----------|
| _____  | _____  | _____     |

# STUDY DESIGN

- 407 Johne's disease risk assessments from Washington (199) and Oregon (208) since 2003
- From 312 herds (160 WA, 152 OR) with 95 follow-ups
- Two Johne's disease status variables
  - Johne's positive herd defined as at least one clinical cow or one positive test in last year = 52.2% of all herds (53.1% WA, 51.3% OR)
  - Johne's positive cow reported in their history = 72.3% of all herds (72.1% WA, 72.7% OR)
- Data entered into RAMP software and imported into database for analysis with Statistix®



# RISK FACTOR SCORES

| RISK FACTOR                               | MEAN (SE)   | RANGE | 25TH | 75TH |
|---|-------------|-------|------|------|
| Calving Area, Stocking Density            | 4.28 (0.13) | 0-10  | 2    | 6    |
| Calving Area, Manure Build Up             | 3.40 (0.12) | 0-10  | 2    | 5    |
| Calving Area, Area Used For Sick Cows     | 2.51 (0.10) | 0-10  | 0    | 5    |
| Calving Area, Presence Of JD Suspects     | 1.76 (0.12) | 0-10  | 0    | 2    |
| Calving Area, Manure Soiled Udder Or Legs | 2.65 (0.09) | 0-10  | 1    | 4    |
| Calving Area, Calves Born In Other Area   | 1.95 (0.08) | 0-10  | 1    | 3    |
| Calving Area, Time Calves Stay With Dam   | 3.68 (0.12) | 0-10  | 2    | 5    |
| Calving Area, Calves Ability To Nurse Dam | 4.15 (0.15) | 0-10  | 1    | 6    |
| Pre-Wean, Fed Pooled Colostrum            | 2.55 (0.15) | 0-10  | 0    | 5    |
| Pre-Wean, Fed Colostrum From Several      | 3.66 (0.15) | 0-10  | 1    | 5    |
| Pre-Wean, Fed Unpasteurized Pooled Milk   | 3.96 (0.17) | 0-10  | 0    | 8    |
| Pre-Wean, Contaminated Colostrum / Milk   | 1.40 (0.07) | 0-7   | 0    | 2    |
| Pre-Wean, Contaminated Feed / Water       | 1.38 (0.08) | 0-9   | 0    | 2    |
| Pre-Wean, Contact With Cow Manure         | 1.40 (0.10) | 0-10  | 0    | 2    |

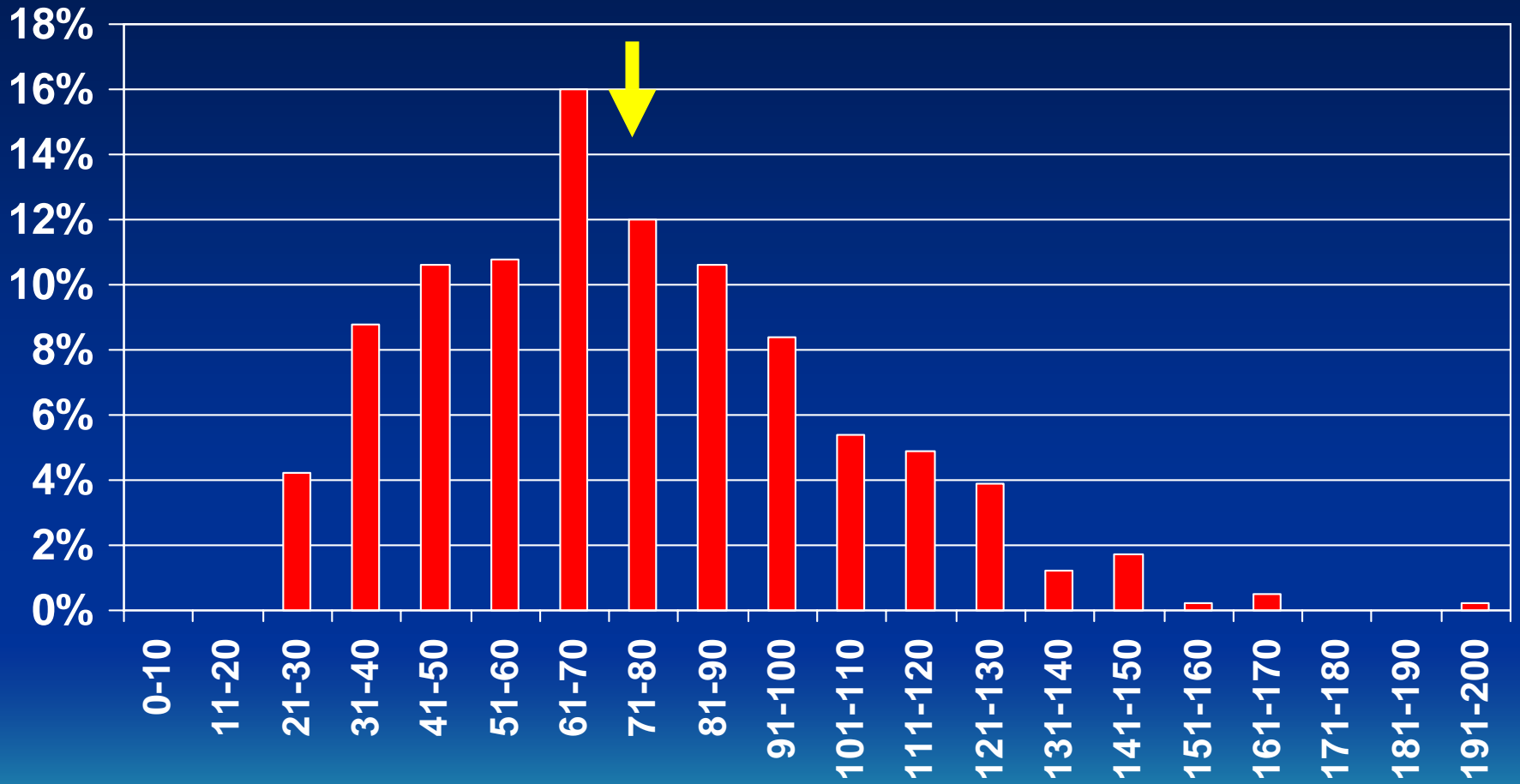
# RISK FACTOR SCORES

| RISK FACTOR                                 | MEAN (SE)          | RANGE      | 25TH     | 75TH     |
|---|--------------------|------------|----------|----------|
| Post-Wean, Contact With Cow Manure          | 1.49 (0.09)        | 0-7        | 0        | 2        |
| Post-Wean, Contaminated Feed                | 1.49 (0.09)        | 0-7        | 0        | 2        |
| Post-Wean, Contaminated Water               | 1.15 (0.09)        | 0-7        | 0        | 2        |
| Post-Wean, Shared Pasture With Cows         | 0.84 (0.09)        | 0-7        | 0        | 1        |
| <b>Post-Wean, Manure Spread On Forage</b>   | <b>3.19 (0.14)</b> | <b>0-7</b> | <b>1</b> | <b>6</b> |
| Bred Heifer, Contact With Cow Manure        | 1.77 (0.09)        | 0-5        | 0        | 3        |
| Bred Heifer, Contaminated Feed              | 1.50 (0.08)        | 0-5        | 0        | 3        |
| Bred Heifer, Contaminated Water             | 1.29 (0.07)        | 0-5        | 0        | 2        |
| Bred Heifer, Shared Pasture With Cows       | 1.78 (0.10)        | 0-5        | 0        | 3        |
| <b>Bred Heifer, Manure Spread On Forage</b> | <b>3.07 (0.09)</b> | <b>0-5</b> | <b>2</b> | <b>5</b> |
| Cow / Bull, Contaminated Feed               | 1.53 (0.05)        | 0-4        | 1        | 2        |
| Cow / Bull, Contaminated Water              | 1.44 (0.06)        | 0-4        | 1        | 2        |
| Cow / Bull, Access To Stored Manure         | 0.90 (0.06)        | 0-4        | 0        | 1        |
| Cow / Bull, Manure Spread On Forage         | 2.85 (0.06)        | 0-4        | 2        | 4        |

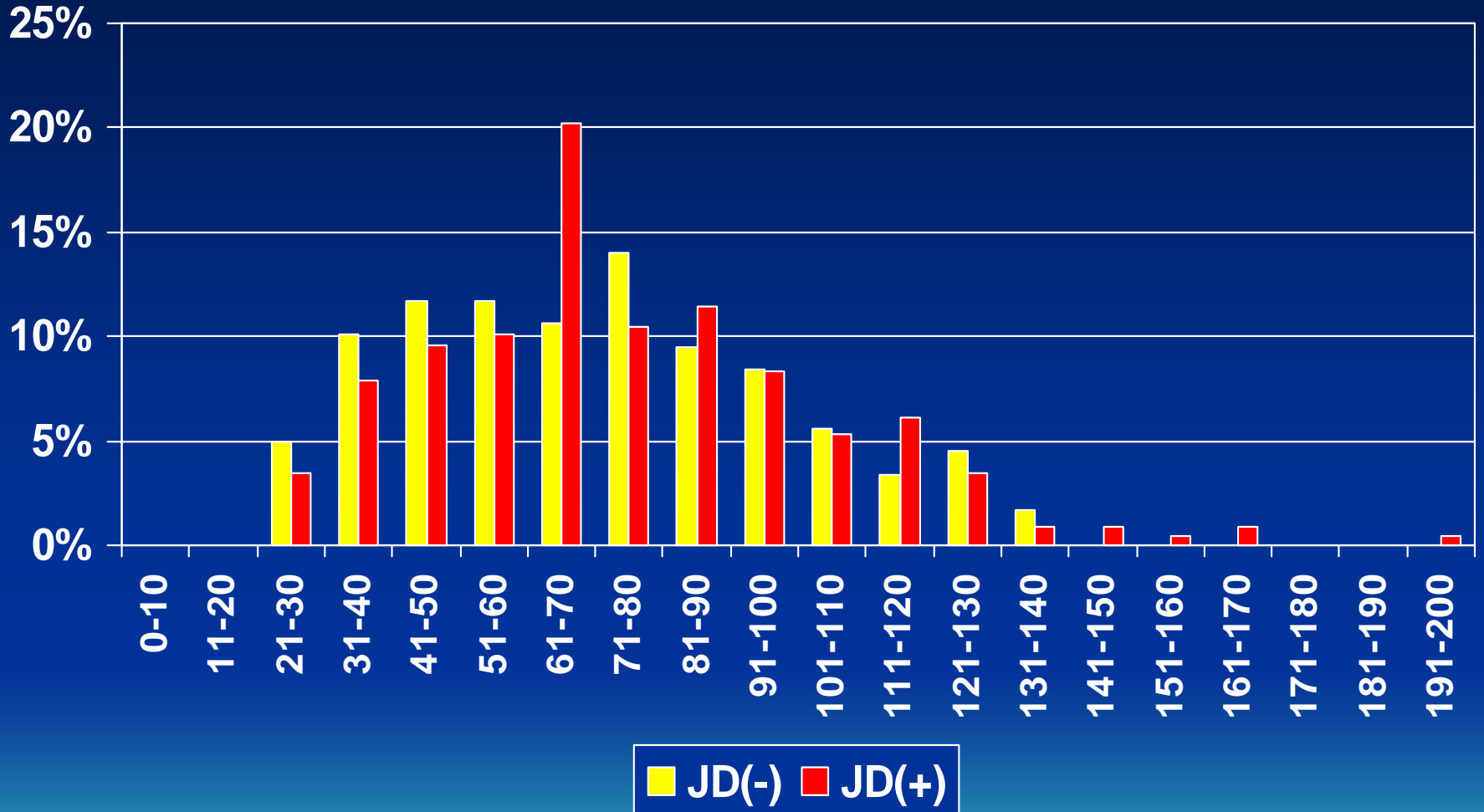
# RISK FACTOR SCORES

| RISK FACTOR                              | MEAN (SE)          | RANGE         | 25TH      | 75TH      |
|--|--------------------|---------------|-----------|-----------|
| Additions From Level 2-4 Herds           | 0.8 (0.10)         | 0-8           | 0         | 0         |
| Additions From Level 1 Herds             | 1.2 (0.18)         | 0-14          | 0         | 0         |
| Additions From Single Source, Untested   | 4.1 (0.44)         | 0-40          | 0         | 0         |
| Additions From Multiple Source, Untested | 7.4 (0.71)         | 0-40          | 0         | 26        |
|  |                    |               |           |           |
| Calving Area Score                       | 24.4 (0.57)        | 0-63          | 15        | 32        |
| Pre-Weaned Heifer Score                  | 13.3 (0.46)        | 0-49          | 6         | 19        |
| Post-Weaned Heifer Score                 | 6.5 (0.28)         | 0-28          | 2         | 10        |
| Bred Heifer Score                        | 8.2 (0.32)         | 0-25          | 3         | 13        |
| Cow And Bull Score                       | 6.6 (0.14)         | 0-15          | 4         | 8         |
| Addition And Replacements Score          | 13.1 (0.85)        | 0-60          | 0         | 26        |
| Herd Size                                | 471 (43.4)         | 25-9300       | 95        | 461       |
| <b>Overall Score</b>                     | <b>72.1 (1.47)</b> | <b>23-194</b> | <b>50</b> | <b>91</b> |

# DISTRIBUTION OF RA SCORES

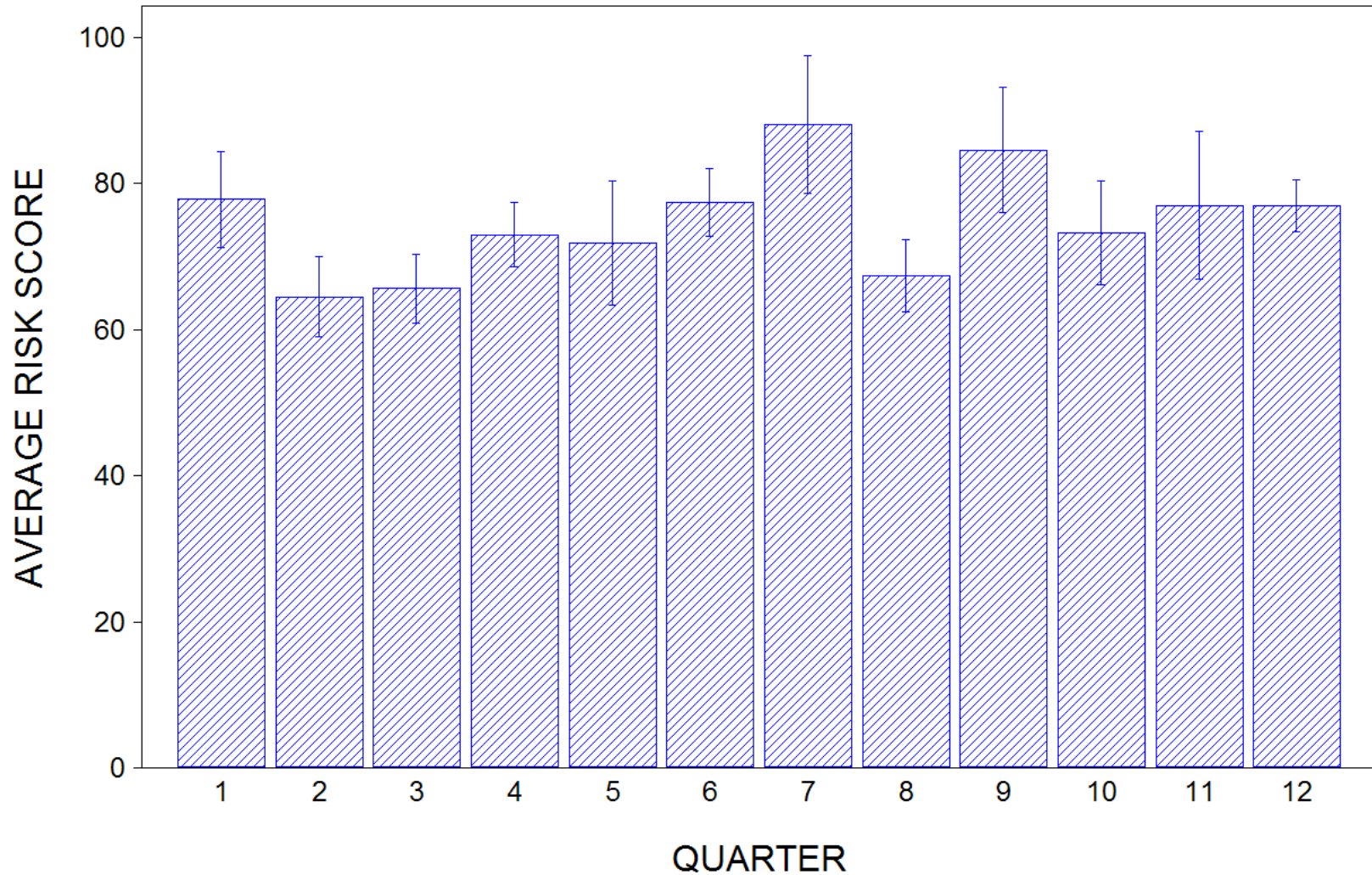


# DISTRIBUTION OF RA SCORES



# TREND OVER TIME

## RISK SCORE BY QUARTER



QTR 1 = Q1, 2004 : QTR 12 = Q4, 2006

# SUMMARY SCORES

| SCORE TYPE            | JD(-) HERDS              | JD(+) HERDS              | ALL HERDS                |
|-----------------------|--------------------------|--------------------------|--------------------------|
| Calving Area          | 24.3 (22.3, 26.3)        | 26.0 (24.3, 27.7)        | 25.3 (24.0, 26.6)        |
| Pre-Weaned            | 14.8 (13.2, 16.4)        | 15.3 (13.9, 16.7)        | 15.1 (14.6, 16.1)        |
| Post-Weaned           | 8.8 (7.9, 9.7)           | 8.0 (7.1, 8.8)           | 8.3 (7.7, 8.9)           |
| Bred Heifer           | 10.4 (9.3, 11.6)         | 9.5 (8.5, 10.4)          | 9.8 (9.1, 10.6)          |
| <b>Cow &amp; Bull</b> | <b>6.3 (5.8, 6.8)</b>    | <b>7.2 (6.8, 7.7)</b>    | <b>6.8 (6.5, 7.1)</b>    |
| Additions             | 12.6 (10.3, 15.1)        | 13.1 (10.4, 15.7)        | 12.8 (10.9, 14.8)        |
| <b>Herd Size</b>      | <b>237 (187, 287)</b>    | <b>712 (517, 902)</b>    | <b>496 (383, 609)</b>    |
| <b>Overall</b>        | <b>77.3 (71.9, 82.6)</b> | <b>79.1 (74.4, 83.7)</b> | <b>78.2 (74.7, 81.6)</b> |

294 TOTAL HERDS, 129 JD(-), 165 JD(+)

# FOLLOW-UP SCORES

| <b>RISK FACTOR</b>                        | <b>% DN</b> | <b>% SAME</b> | <b>% UP</b> |
|---|-------------|---------------|-------------|
| Calving Area, Stocking Density            | 23.2        | 60.0          | 16.8        |
| Calving Area, Manure Build Up             | 21.1        | 56.8          | 22.1        |
| Calving Area, Area Used For Sick Cows     | 22.1        | 58.9          | 18.9        |
| Calving Area, Presence Of JD Suspects     | 17.9        | 64.2          | 17.9        |
| Calving Area, Manure Soiled Udder Or Legs | 23.2        | 56.8          | 20.0        |
| Calving Area, Calves Born In Other Area   | 29.5        | 53.7          | 16.8        |
| Calving Area, Time Calves Stay With Dam   | 22.1        | 50.5          | 17.9        |
| Calving Area, Calves Ability To Nurse Dam | 32.6        | 56.8          | 10.5        |
| Pre-Wean, Fed Pooled Colostrum            | 22.4        | 65.3          | 7.3         |
| Pre-Wean, Fed Colostrum From Several      | 36.8        | 49.5          | 13.7        |
| Pre-Wean, Fed Unpasteurized Pooled Milk   | 39.4        | 52.1          | 8.5         |
| Pre-Wean, Contaminated Colostrum / Milk   | 25.3        | 62.1          | 12.6        |
| Pre-Wean, Contaminated Feed / Water       | 21.1        | 64.2          | 14.7        |
| Pre-Wean, Contact With Cow Manure         | 25.3        | 63.2          | 11.6        |

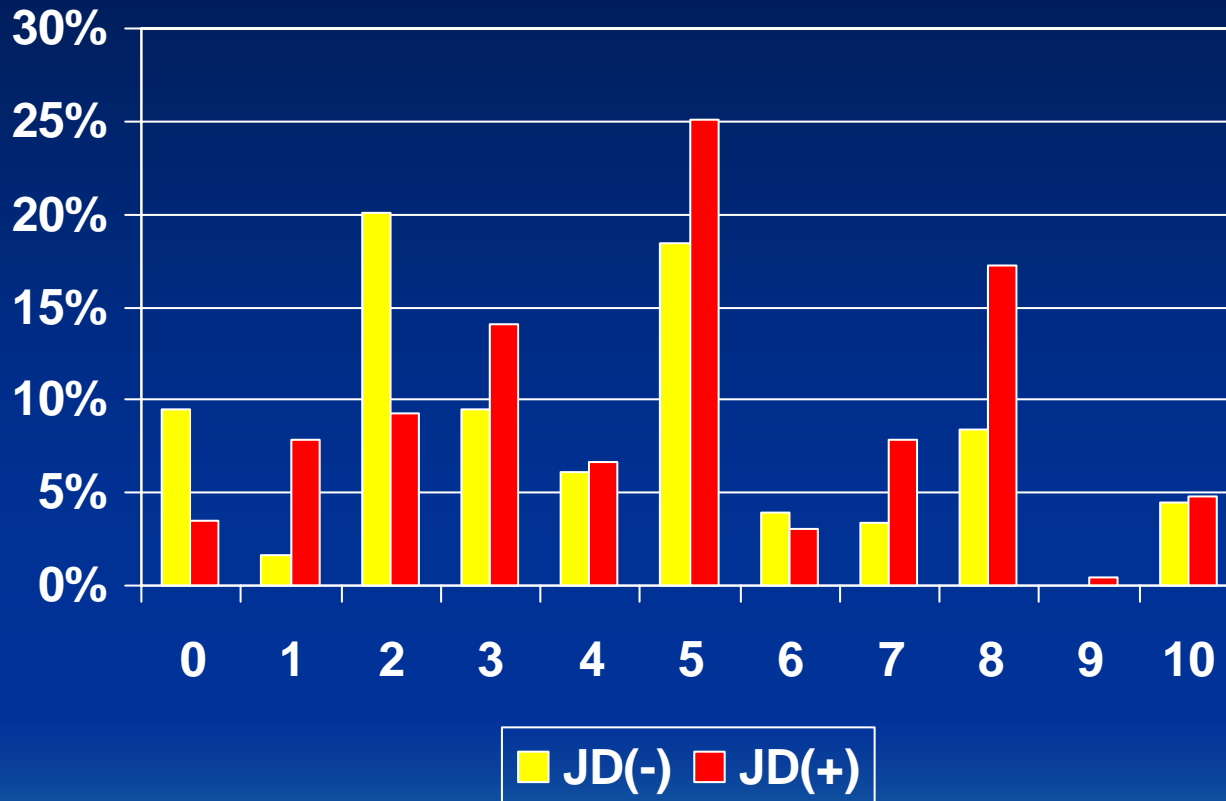
# FOLLOW-UP SCORES

| <b>RISK FACTOR</b>                           | <b>% DN</b> | <b>% SAME</b> | <b>% UP</b> |
|--|-------------|---------------|-------------|
| <b>Post-Wean, Contact With Cow Manure</b>    | <b>18.9</b> | <b>71.6</b>   | <b>9.5</b>  |
| <b>Post-Wean, Contaminated Feed</b>          | <b>20.0</b> | <b>66.3</b>   | <b>13.7</b> |
| <b>Post-Wean, Contaminated Water</b>         | <b>14.7</b> | <b>76.8</b>   | <b>8.4</b>  |
| <b>Post-Wean, Shared Pasture With Cows</b>   | <b>13.7</b> | <b>74.7</b>   | <b>11.6</b> |
| <b>Post-Wean, Manure Spread On Forage</b>    | <b>21.1</b> | <b>61.1</b>   | <b>17.9</b> |
| <b>Bred Heifer, Contact With Cow Manure</b>  | <b>17.9</b> | <b>66.3</b>   | <b>15.9</b> |
| <b>Bred Heifer, Contaminated Feed</b>        | <b>21.1</b> | <b>66.3</b>   | <b>12.6</b> |
| <b>Bred Heifer, Contaminated Water</b>       | <b>12.6</b> | <b>74.7</b>   | <b>12.6</b> |
| <b>Bred Heifer, Shared Pasture With Cows</b> | <b>11.6</b> | <b>76.8</b>   | <b>11.6</b> |
| <b>Bred Heifer, Manure Spread On Forage</b>  | <b>21.1</b> | <b>66.3</b>   | <b>12.6</b> |
| <b>Cow / Bull, Contaminated Feed</b>         | <b>15.8</b> | <b>66.3</b>   | <b>17.9</b> |
| <b>Cow / Bull, Contaminated Water</b>        | <b>14.7</b> | <b>69.5</b>   | <b>15.8</b> |
| <b>Cow / Bull, Access To Stored Manure</b>   | <b>13.7</b> | <b>72.6</b>   | <b>13.7</b> |
| <b>Cow / Bull, Manure Spread On Forage</b>   | <b>17.9</b> | <b>75.8</b>   | <b>6.3</b>  |

# FOLLOW-UP SCORES

| <b>RISK FACTOR</b>                     | <b>% DN</b> | <b>% SAME</b> | <b>% UP</b> |
|--|-------------|---------------|-------------|
| <b>Calving Area Score</b>              | <b>40.0</b> | <b>29.5</b>   | <b>34.5</b> |
| <b>Pre-Weaned Heifer Score</b>         | <b>50.5</b> | <b>34.7</b>   | <b>14.7</b> |
| <b>Post-Weaned Heifer Score</b>        | <b>35.8</b> | <b>45.3</b>   | <b>18.9</b> |
| <b>Bred Heifer Score</b>               | <b>28.4</b> | <b>51.6</b>   | <b>20.0</b> |
| <b>Cow And Bull Score</b>              | <b>25.3</b> | <b>53.7</b>   | <b>21.1</b> |
| <b>Addition And Replacements Score</b> | <b>31.6</b> | <b>47.4</b>   | <b>21.1</b> |
|  |             |               |             |
| <b>Overall Score</b>                   | <b>53.8</b> | <b>14.3</b>   | <b>31.9</b> |

# CA1: CROWDING OF CALVING AREA



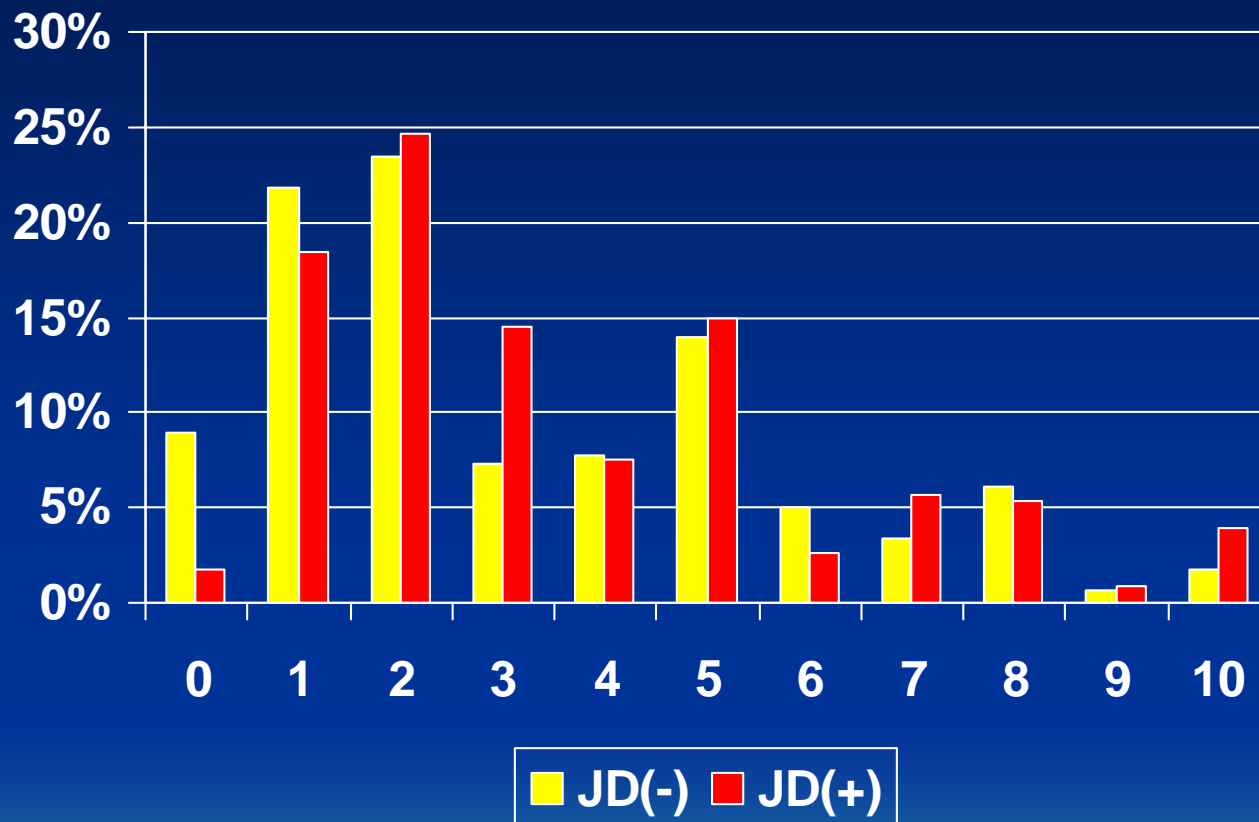
## STATISTICS

JD(-):  $3.60 \pm 0.20$   
JD(+):  $4.82 \pm 0.17$

ALL:  $4.28 \pm 0.13$   
 $P < 0.01$   
 $P(\text{Chi}) < 0.01$

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# CA2: MANURE BUILD UP IN CALVING AREA



## STATISTICS

JD(-):  $3.16 \pm 0.18$

JD(+):  $3.61 \pm 0.16$

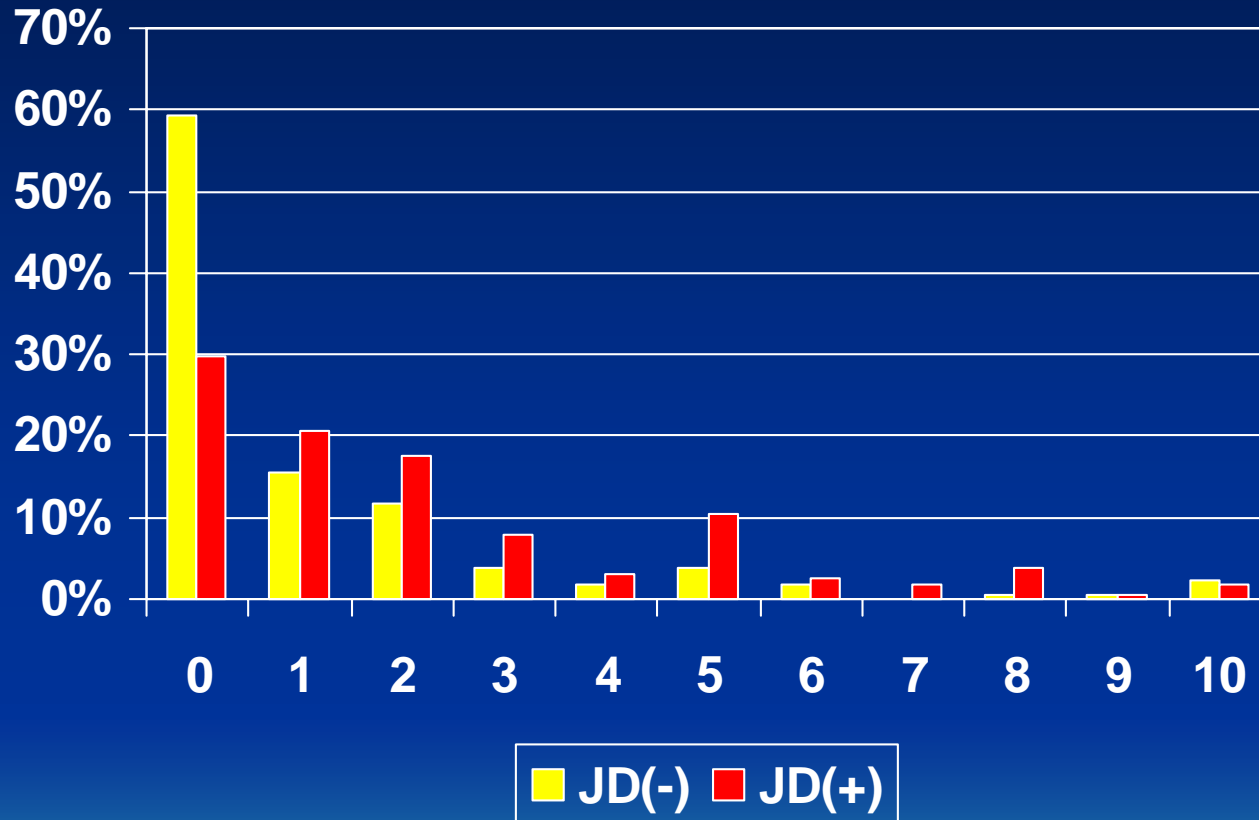
ALL:  $3.40 \pm 0.12$

P = 0.07

P(Chi) = 0.02

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# CA4: PRESENCE OF JD SUSPECTS



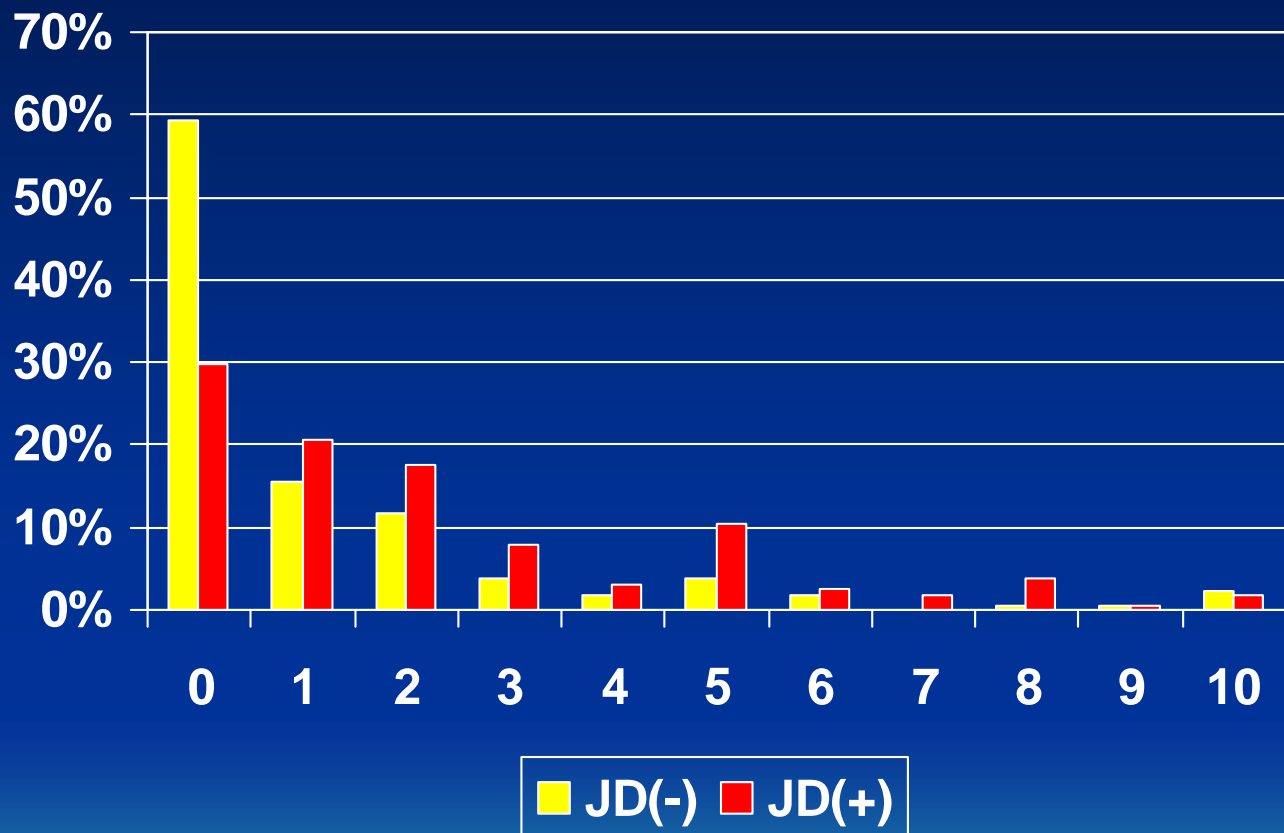
## STATISTICS

JD(-):  $1.14 \pm 0.15$   
JD(+):  $2.25 \pm 0.16$

ALL:  $1.76 \pm 0.12$   
 $P < 0.01$   
 $P(\text{Chi}) < 0.01$

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# CA5: MANURE SOILED UDDER OR LEGS



## STATISTICS

JD(-):  $2.33 \pm 0.14$

JD(+):  $2.94 \pm 0.13$

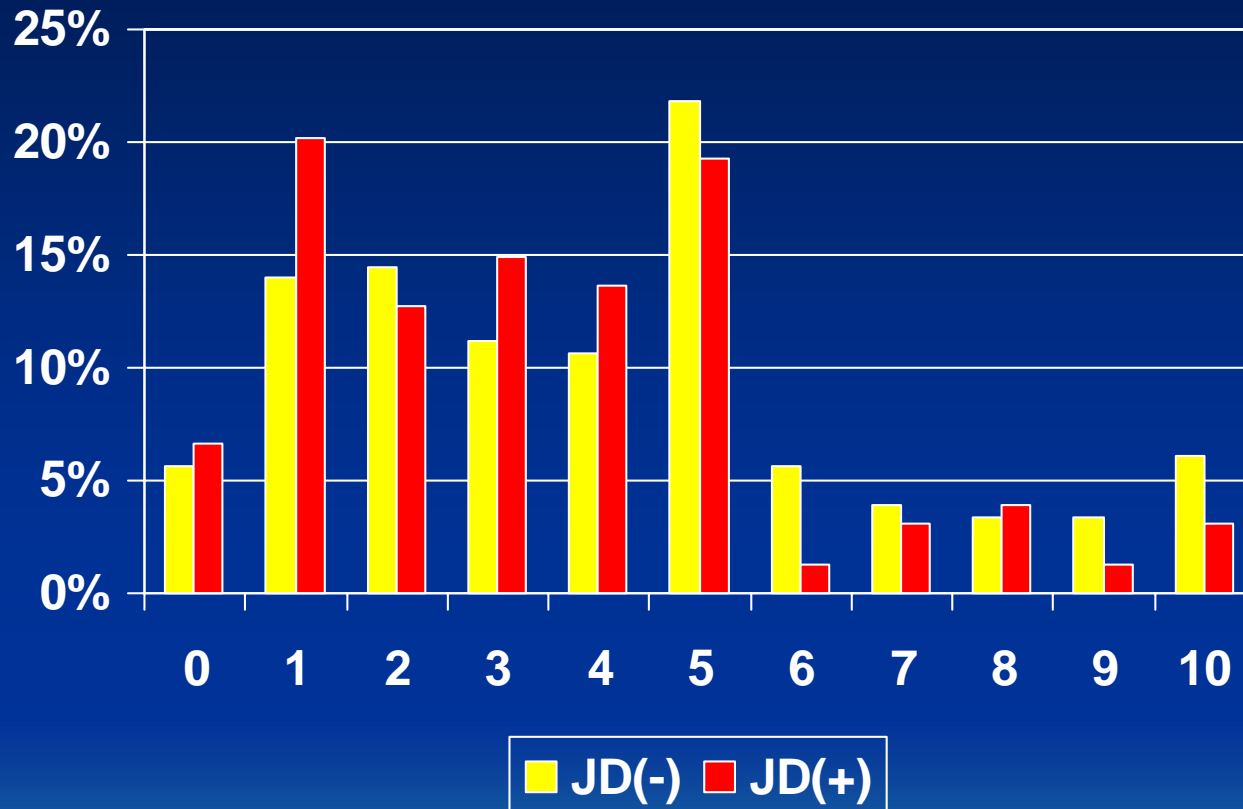
ALL:  $2.65 \pm 0.09$

$P < 0.01$

$P(\text{Chi}) < 0.01$

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# CA7: TIME CALVES STAY WITH DAM



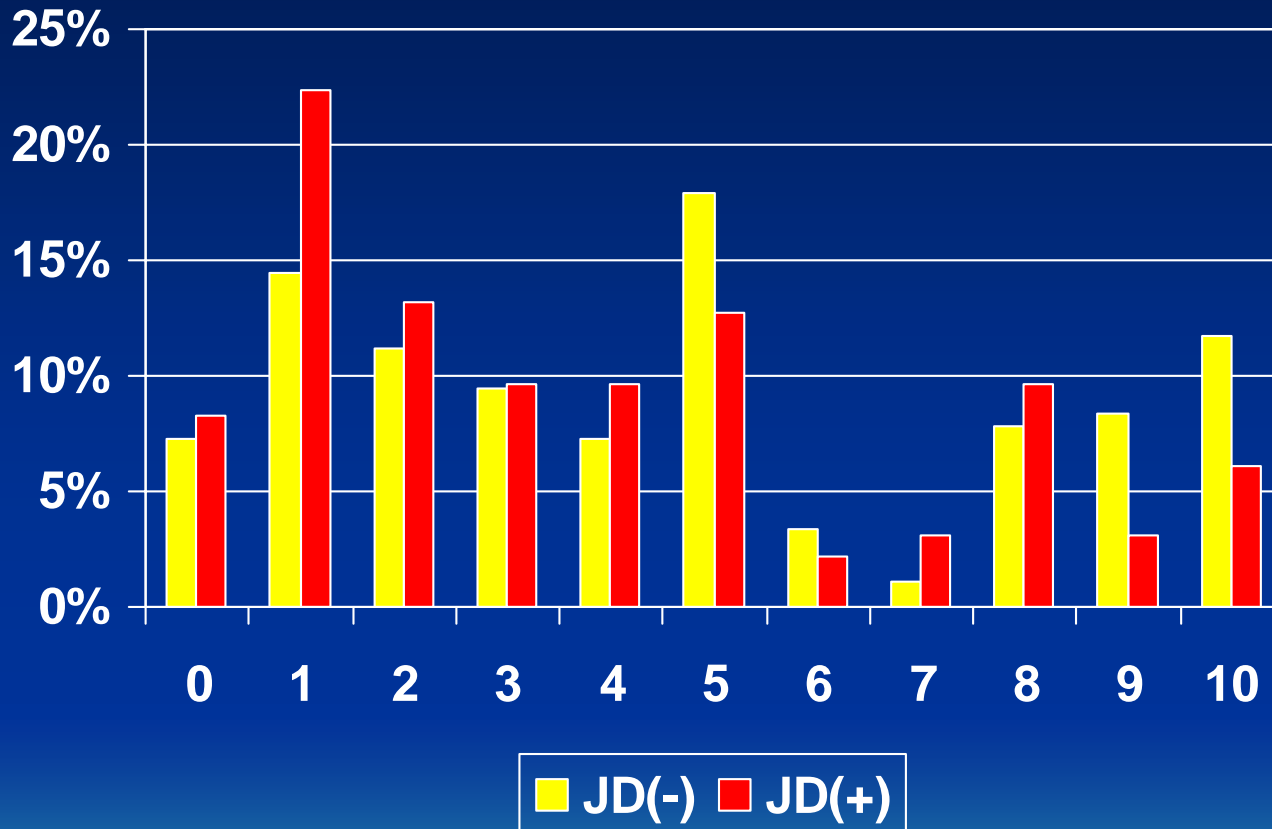
## STATISTICS

JD(-):  $4.07 \pm 0.20$   
JD(+):  $3.44 \pm 0.16$

ALL:  $3.68 \pm 0.12$   
P = 0.01  
P(Chi) = 0.14

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# CA8: CALVES ABLE TO NURSE DAM



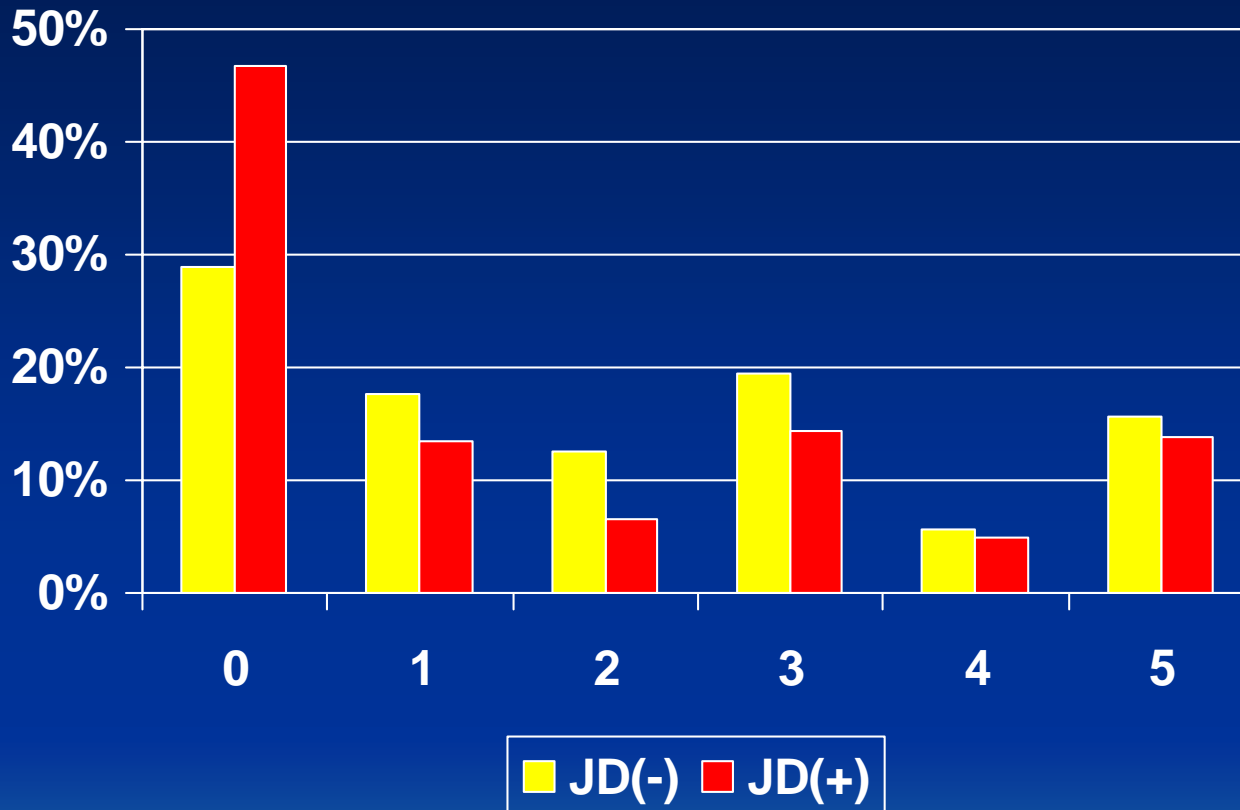
## STATISTICS

JD(-):  $4.67 \pm 0.24$   
JD(+):  $3.80 \pm 0.20$

ALL:  $4.15 \pm 0.15$   
 $P < 0.01$   
 $P(\text{Chi}) = 0.06$

407 TOTAL HERDS, 179 JD(-), 228 JD(+)

# BH4: SHARED PASTURE WITH COWS



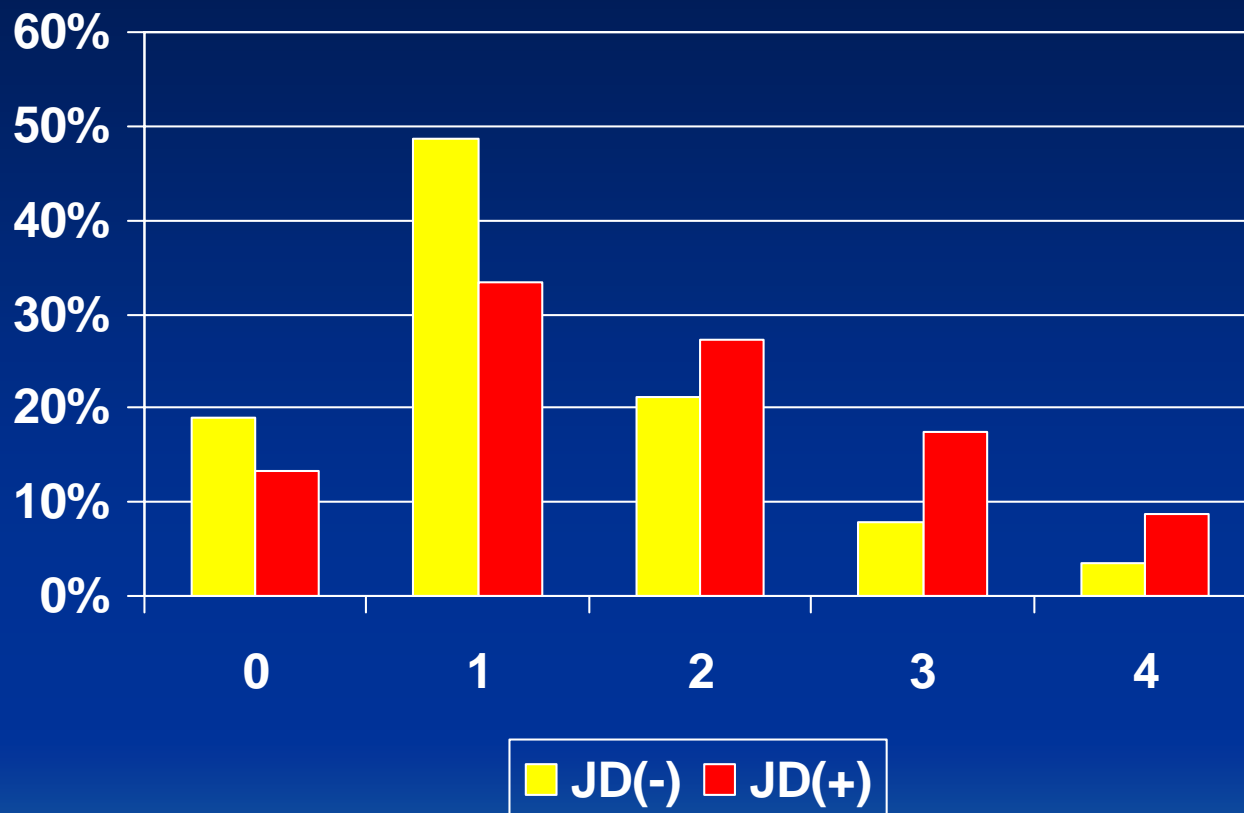
## STATISTICS

JD(-):  $2.03 \pm 0.14$   
JD(+):  $1.59 \pm 0.13$

ALL:  $1.76 \pm 0.10$   
P = 0.03  
P(Chi) = 0.03

407 TOTAL HERDS, 159 JD(-), 201 JD(+), 47 NO BH

# CB1: MANURE CONTAMINATION OF FEED



## STATISTICS

JD(-):  $1.28 \pm 0.07$

JD(+):  $1.75 \pm 0.07$

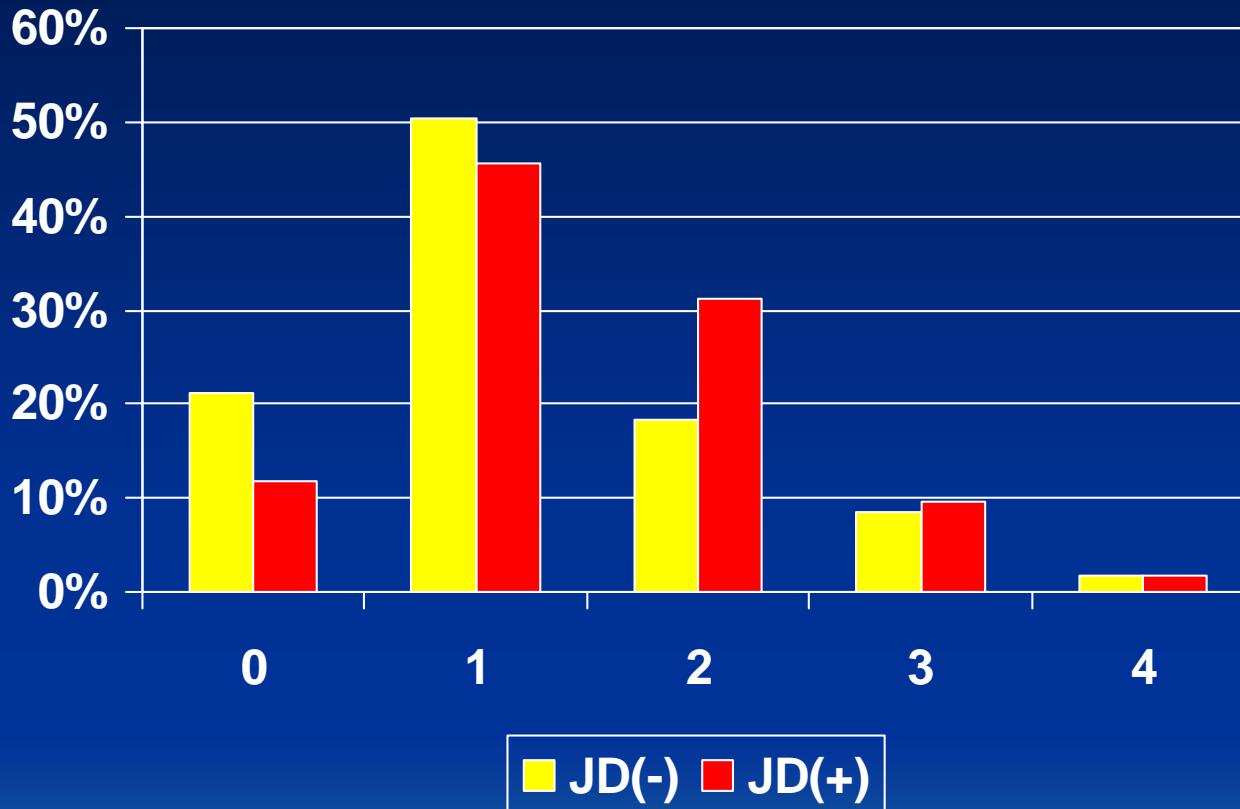
ALL:  $1.53 \pm 0.05$

$P < 0.01$

$P(\text{Chi}) < 0.01$

407 TOTAL HERDS, 159 JD(-), 201 JD(+)

# CB2: MANURE CONTAMINATION OF WATER



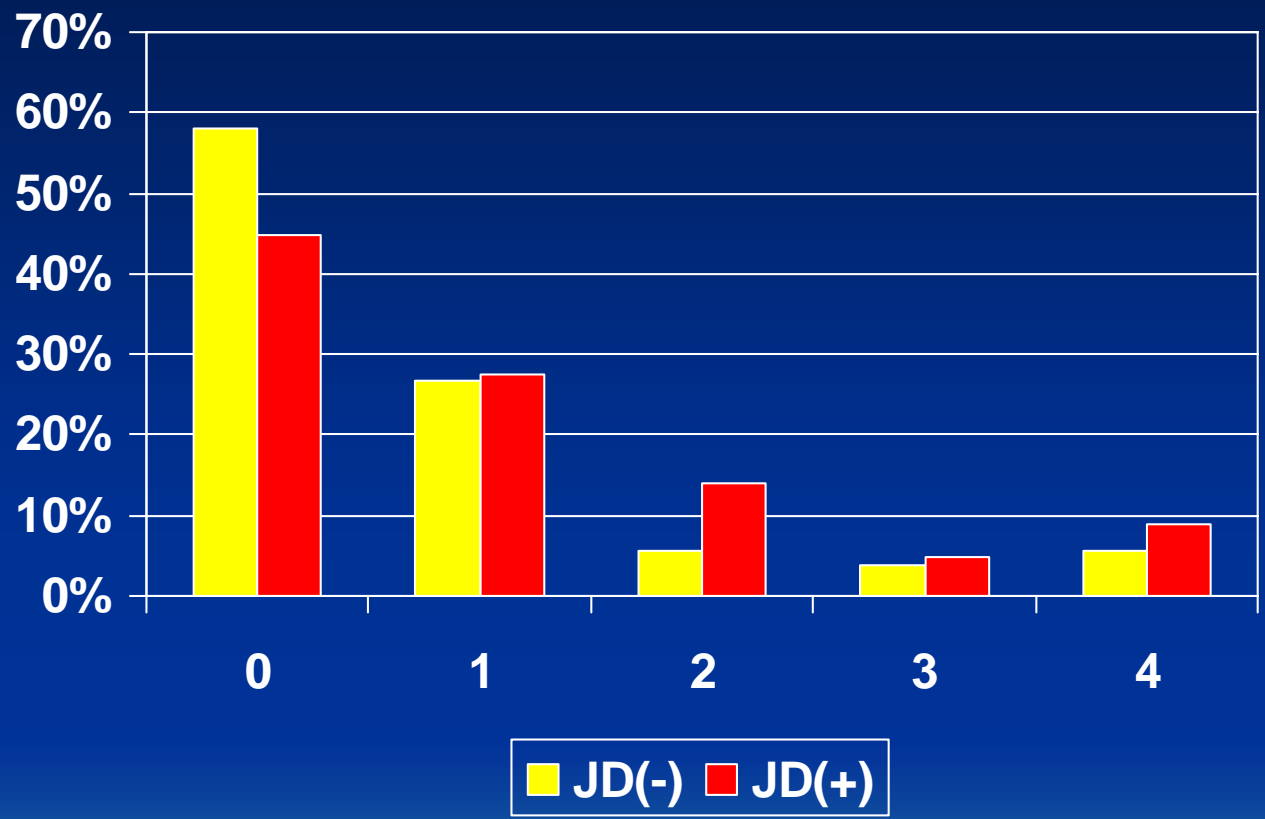
## STATISTICS

JD(-):  $1.19 \pm 0.07$   
JD(+):  $1.44 \pm 0.06$

ALL:  $1.32 \pm 0.06$   
P < 0.01  
P(Chi) = 0.01

407 TOTAL HERDS, 159 JD(-), 201 JD(+)

# CB3: ACCESS TO STORED MANURE



## STATISTICS

JD(-):  $0.72 \pm 0.08$

JD(+):  $1.05 \pm 0.08$

ALL:  $0.90 \pm 0.06$

$P < 0.01$

$P(\text{Chi}) = 0.01$

407 TOTAL HERDS, 159 JD(-), 201 JD(+)

# “SIGNIFICANT” RISK FACTORS

- Stocking density of calving area
- Manure build up in calving area
- Presence of Johne’s suspects / clinicals
- Manure soiled udder or legs
- Time calves stay with dam
- Calves able to nurse
- Bred heifers sharing pasture with cows
- Manure contamination of cow feed
- Manure contamination of cow water
- Cow access to stored manure



# LOGISTIC REGRESSION

| RISK FACTOR                          | ODDS RATIO        | MEAN SCORE  |
|--------------------------------------|-------------------|-------------|
| Herd size > 500                      | 1.95 (1.08, 3.54) | ---         |
| Added animals in last year           | 1.88 (1.15, 3.07) | ---         |
| Crowded calving area                 | 1.23 (1.09, 1.37) | 4.28 (0.13) |
| Manure in calving area               | 0.83 (0.73, 0.95) | 3.40 (0.12) |
| JD suspects in calving area          | 1.22 (1.08, 1.37) | 1.76 (0.12) |
| Manure soiled udder / legs           | 1.12 (0.96, 1.30) | 2.65 (0.09) |
| Bred heifers share pasture with cows | 0.89 (0.78, 1.02) | 1.76 (0.10) |
| Manure contamination of cow feed     | 1.38 (1.11, 1.71) | 1.53 (0.05) |



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