

fatal. In June 1988, the disease was made notifiable. This requires any farmer suspecting an animal with BSE to report this fact to the Ministry of Agriculture.

Clinical symptoms are variable but progressive. The first noticeable sign is weight loss and a drop in milk yield. The animal becomes apprehensive starting off being last to enter the parlour, then totally refusing to enter the parlour, or to cross doorways. Animals may then start kicking on handling. Production loss is due to the animal being nervous so that feed intake is reduced. Muscle tremors are also evident.

As the disease progresses a characteristic high stepping hind leg gait becomes evident. Animals are reluctant to walk on concrete as they tend to slip and fall down, and may scramble across the yard on all fours in an attempt to get up. Animals may become very aggressive if cornered. Finally the animals become ataxic, recumbent and eventually die.

Symptoms can develop over a period of days or weeks. Many cases are seen shortly after calving, as dry cows are not observed for long periods of time and signs of the disease are easily missed. Differential diagnosis includes hypomagnesemia, nervous acetonemia and listeriosis. Blood magnesium levels are used to differentiate hypomagnesemia from BSE.

A Ministry veterinarian will examine all reported suspect animals, and if BSE is diagnosed clinically the animal is euthanized with xylazine and pentobarbitone. The head of the animal is removed and sent to the State Veterinary Laboratory for disease confirmation by histological examination of the cerebral cortex where there is a characteristic vacuolation of the medulla.

The remainder of the carcass is removed and incinerated. The accuracy of clinical diagnosis, as confirmed by

histological examination is 87%. Compensation is paid by the Ministry of Agriculture up to an agreed maximum based on average market prices and the condition of the affected animal.

BSE has also been diagnosed in Ireland, Switzerland, France and Sultanate of Oman. In Ireland, once BSE has been diagnosed, the entire herd is slaughtered and compensation paid.

To date, over 36,000 cases of BSE have been confirmed on 13,463 farms in England and Wales. The incidence is somewhat sporadic with some farms unaffected, whereas others have been severely affected. Table 1 shows the disease incidence since 1988. It is expected that the number of confirmed cases for 1991 will be double that of 1990, resulting in one percent of the national dairy herd in England and Wales being slaughtered.

Table 1. Summary of BSE Reports From June 1988 to December 1990

	1988	1989	1990
Reports	2517	8446	17326
Slaughtered	2377	8056	16635
Confirmed	2185	7136	14161

**It is suspected that BSE was transmitted through feeding ruminant proteins back to cattle. This feeding practice has been banned since August 1988. There have only been two cases of BSE confirmed in cattle born after this ban was introduced. One of these cases was due to the feeding of old "contaminated" feed, and the other case as yet is unexplained. The incidence of BSE is expected to peak in mid 1992.**

## Herd Health for the Beef Cattle Operation!

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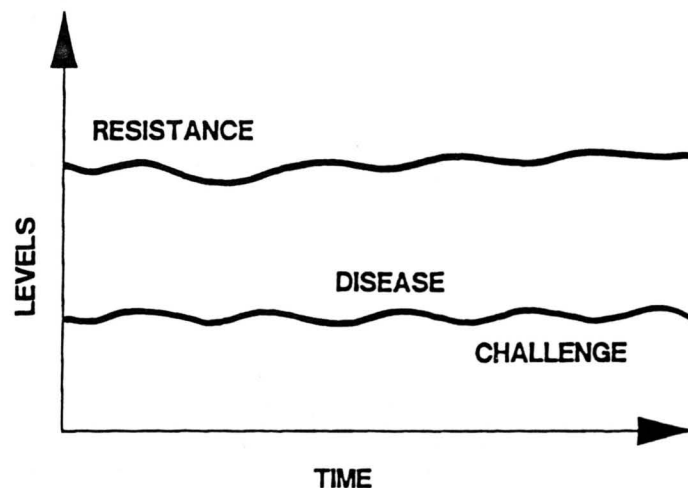
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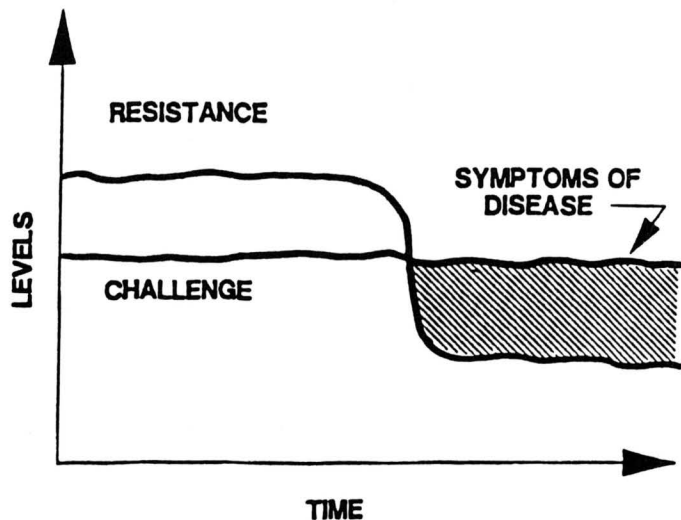
To be able to use herd health programs effectively, they must be SIMPLE & FIT the cattle OPERATION. How do we keep herd (animal) health simple? Know what a HEALTHY HERD is! A healthy herd exists when the RESISTANCE LEVEL of the animals remain above the DISEASE CHALLENGE LEVEL.

If these levels intercept, for any reason, sickness occurs; if the resistance level drops to below the disease chal-



allenge level, sickness occurs; if the disease challenge level rises to above the resistance level, sickness occurs. The worst scenario occurs when the resistance level is dropping at the same time the disease challenge is on the rise; cattle get severely sick, very fast.

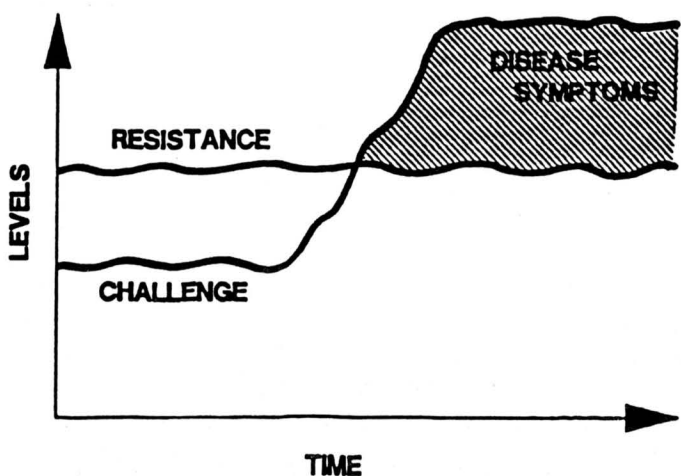
Disease symptoms occur when the resistance level of the herd is lowered.



The resistance level of an animal or a herd can be lowered by excessive stresses put on the herd. Such stresses include, but are not limited to:

- POOR NUTRITION
- SHIPPING
- WINTER STORMS
- PROCESSING
- HEAT STRESS

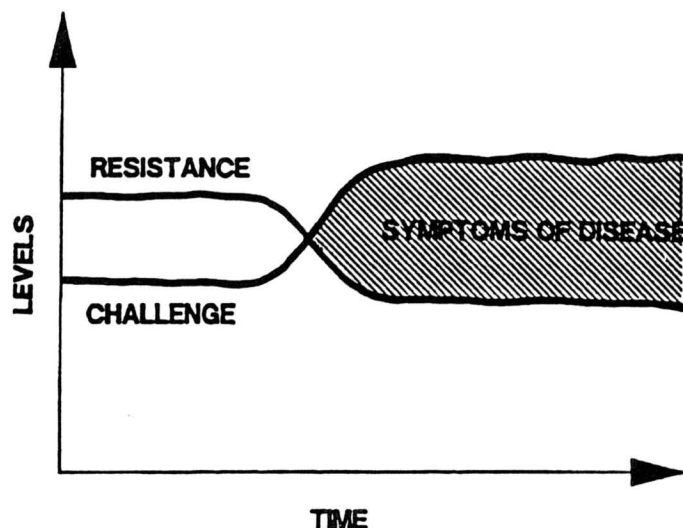
Symptoms of disease occur when the level of the disease challenge is raised.



If a diseased animal is added into a susceptible herd or if susceptible cattle are added into a diseased herd then the DISEASE CHALLENGE on the susceptible cattle is

raised.

Disease symptoms occur when the resistance level is lowered and the disease challenge is raised simultaneously.



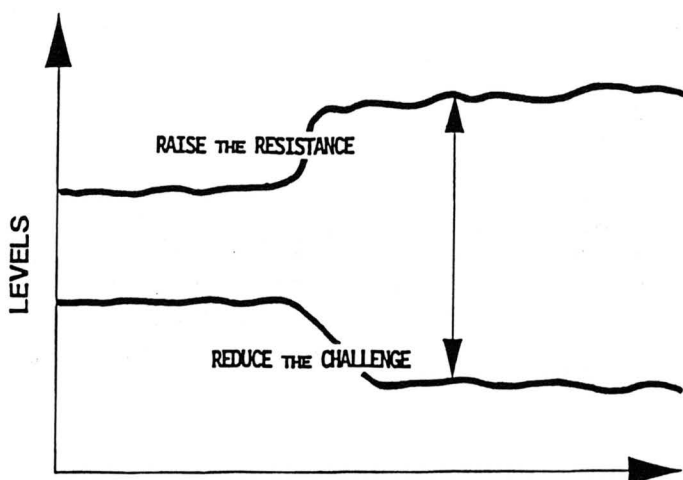
When susceptible cattle are highly stressed at the same time they are exposed to a disease, they can become rapidly and severely sick. An example of this scenario occurs when susceptible calves are shipped into the market system.

We have a job to do; we must CONSTANTLY keep the RESISTANCE LEVEL above the DISEASE CHALLENGE LEVEL, regardless of the disease. We in the cattle industry quite often say "if it ain't broke don't fix it". I am in complete agreement; however, we may not be aware of a "broken" health program UNTIL a DISASTER occurs. We have healthy appearing herds, but will they REMAIN HEALTHY and are they producing optimally? Can they survive a disease challenge? HERD HEALTH PROGRAMS are designed to KEEP THE HERD HEALTHY. Rather than live with the normal spread between the resistance level and disease challenge levels in an "unexposed herd", we should consider RAISING the RESISTANCE LEVELS and REDUCING the DISEASE CHALLENGE LEVELS. By widening the spread between the resistance and disease challenge levels, we have a herd that can withstand an unexpected drop in resistance or an unexpected exposure to disease.

To keep cattle healthy and to KEEP HEALTH SIMPLE . . . all you have to do is:

1. Recognize DISEASE CHALLENGES
2. Know when they OCCUR
3. Then . . .
  - . . .RAISE THE RESISTANCE before the challenge occurs
  - &/or
  - . . .REDUCE THE CHALLENGE

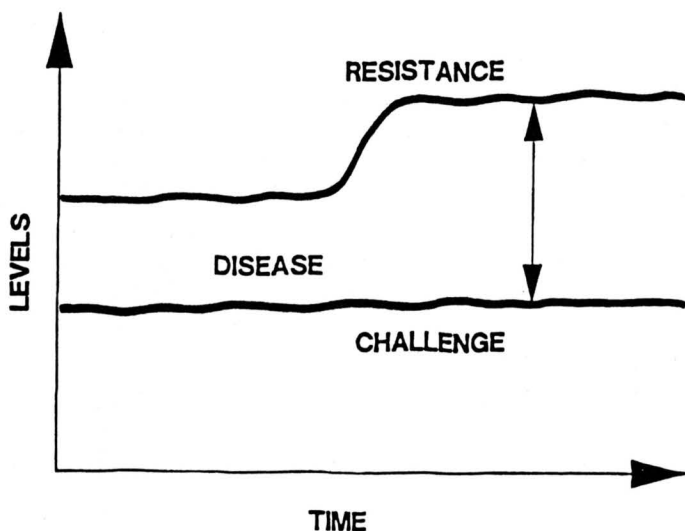
**Herd Health Programs Provide a Comfortable Spread Between the Resistance and the Disease Challenge Levels**



To be able to do so, we must know the TOOLS available to us. Basically, there are only 2 types of tools:

1. VACCINES raise the resistance to certain diseases.
2. REMOVAL OF DISEASED ANIMALS, PARASITE CONTROL, & ANTIBIOTICS reduce the challenges.

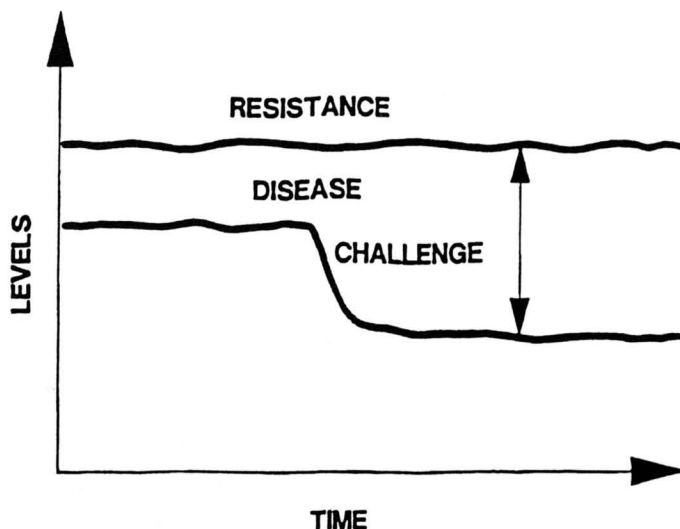
**Rise in resistance due to vaccination**



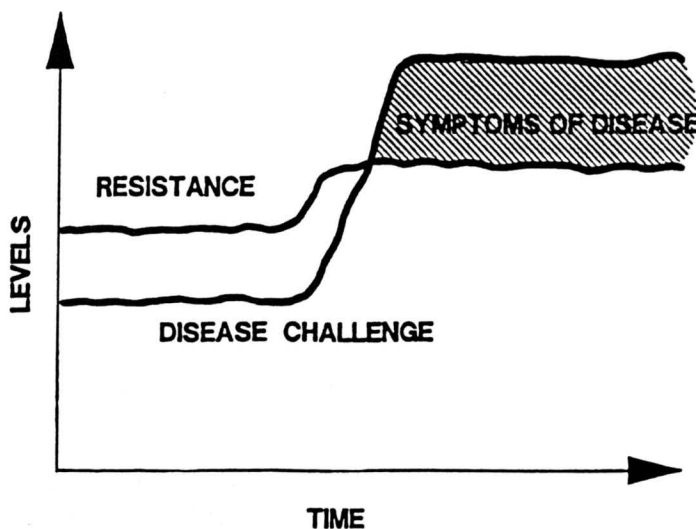
To control some diseases, we raise the resistance to a high level, in other diseases we simply reduce the challenge level; however, with others we MUST BOTH raise the resistance and reduce the disease challenge. If we try to use only the tool for raising the resistance (vaccine), a high disease challenge can overwhelm the raised resistance level.

So let's think about RAISING THE RESISTANCE LEVEL with VACCINATIONS. If the occurrence of the disease challenge can be predicted, we can raise the resis-

Reduction in the disease challenge due to use of antibiotics, parasite control, & the removal of diseased or carrier animals.



A high resistance level can be overwhelmed by an extremely high rise in the disease challenge.

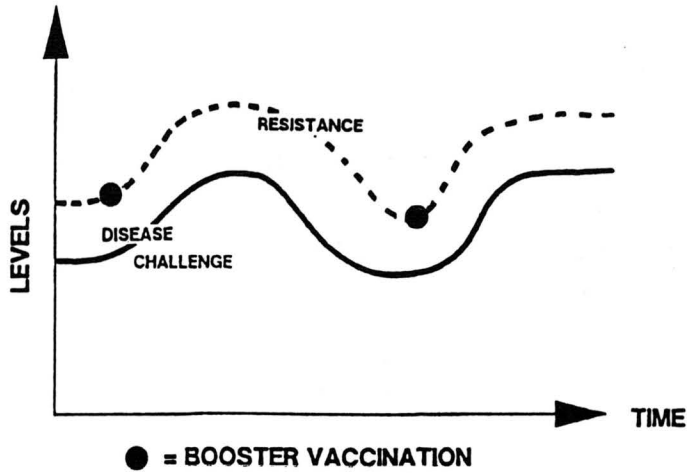


tance level BEFORE the challenge occurs. Once the herd has been initially vaccinated against a disease, periodic booster vaccinations administered before the disease challenge occurs will generally be sufficient.

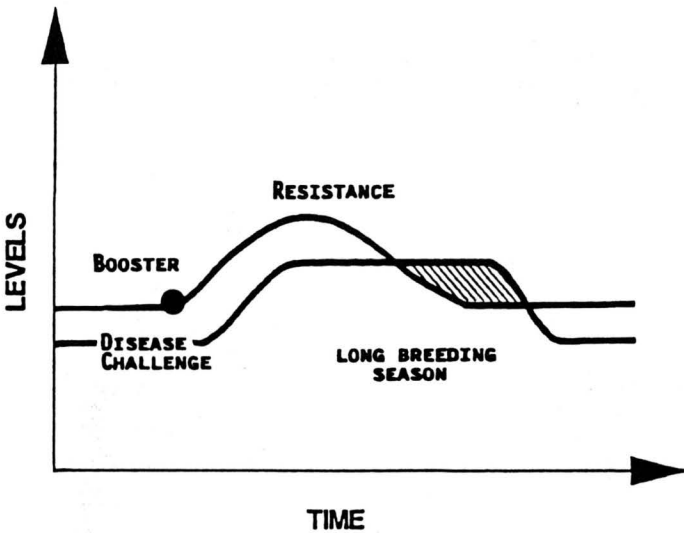
An example of such a prediction is VIBRIO; normally we would re-booster just prior to the breeding season to raise the cow's resistance level to the vibriosis challenge. However, if the disease challenge lasts longer than the increased resistance level, a problem occurs; we run out of "protection".

In other cases, the booster vaccination may be given too early and the elevated resistance may not last through the up-coming disease challenge period.

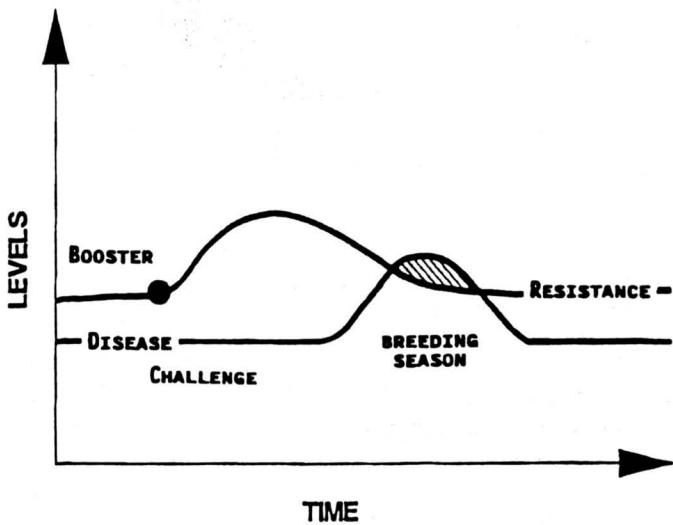
When the disease challenge can be predicted, booster vaccinations are administered in advance.



The challenge outlasts the resistance.

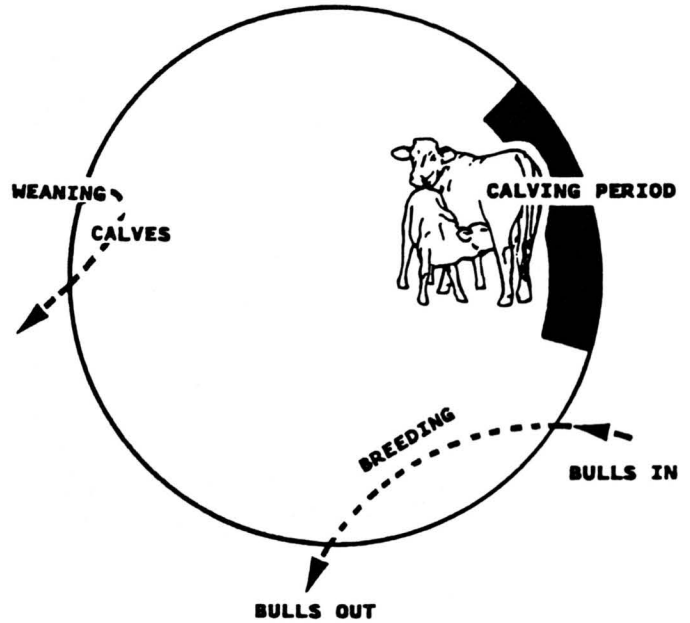


Boosters given too early will not provide adequate resistance to last through the challenge period.



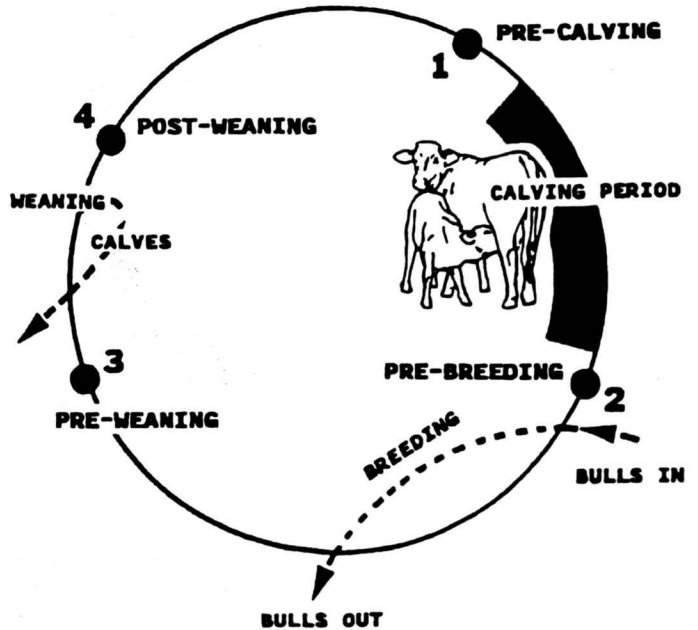
Why do things like this happen? Because the health DOES NOT FIT THE CATTLE OPERATION. For example, if we take a look at the ADULT COW CYCLE in a herd with a 60-day breeding season:

Adult cow cycle: 60 day breeding season



We can easily FIT HEALTH into this operation; the management provides many opportunities to gather cattle and fit health procedures into the adult cow herd: at PRE-CALVING, PRE-BREEDING, PRE-WEANING, and POST-WEANING.

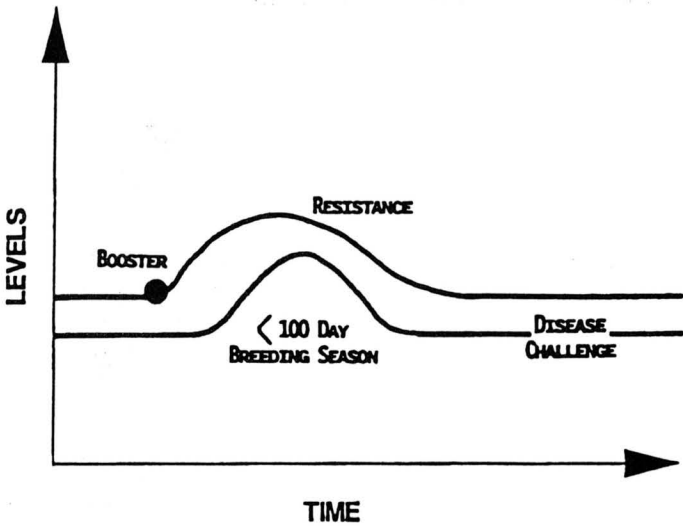
Adult cow cycle: 60 day breeding season



To booster vaccinate this herd against Vibriosis . . . .

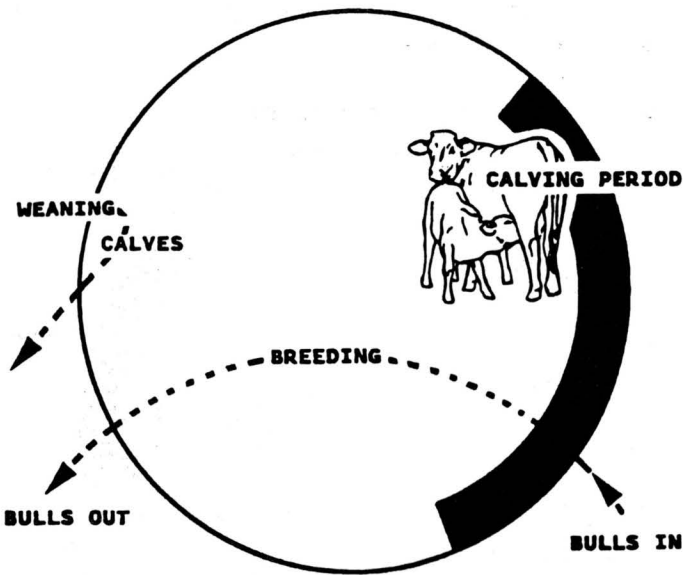
the most opportune time would be between calving and breeding, the PRE-BREEDING window.

**A single booster given before breeding will usually provide adequate resistance against Vibriosis**



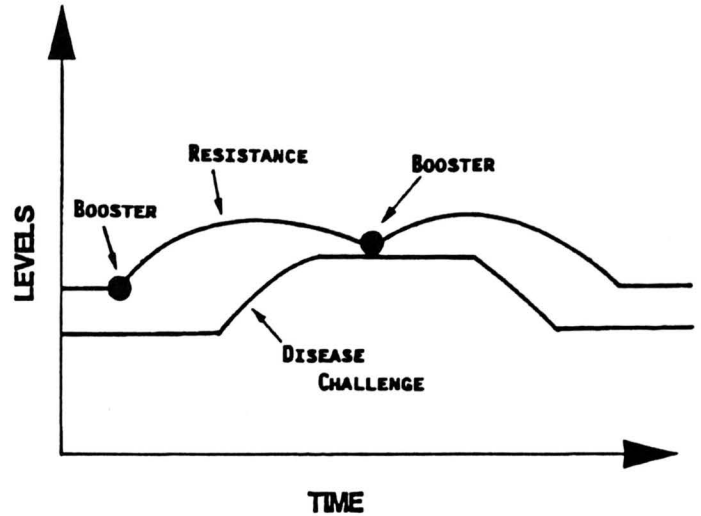
If we EXTEND the breeding season we lose the PRE-BREEDING window available to us; thus, we lose an excellent opportunity to booster vaccinate the herd for vibriosis immediately before the breeding season.

**Adult cow cycle with an extended breeding season**



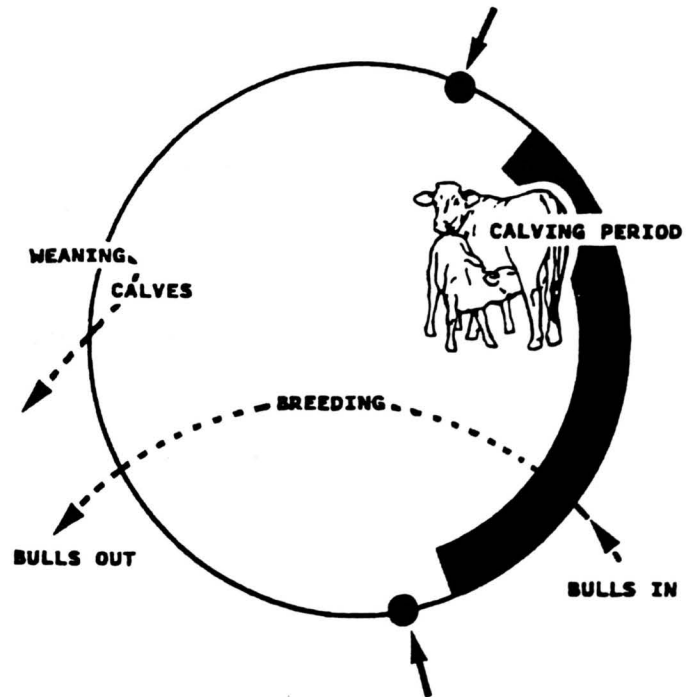
When we are forced to vibrio booster the cow herd at the PRE-CALVING window rather than the pre-breeding window, the resistance level stimulated by the vibrio booster probably will not last as long as necessary. Because of this we may be required to RE-BOOSTER the vibrio vaccination during the breeding season to extend the resistance level.

**Re-boosting may be required to extend the resistance level past the disease challenge period**



If vibriosis is a problem in the herd, this more-or-less dictates when two of the "cow-workings" will occur.

**Adult cow cycle with an extended breeding season.**



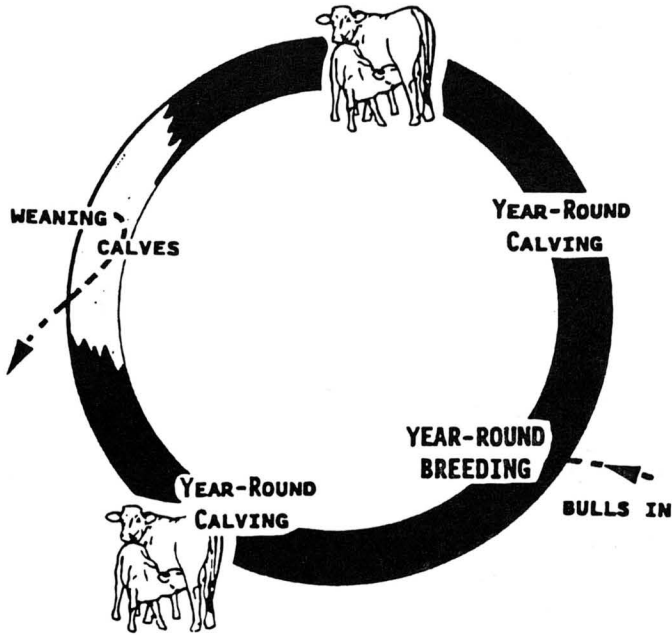
To even complicate things more, how could you provide resistance against vibriosis in a herd that has YEAR-ROUND BREEDING?

It won't be easy, but if we are required to do it, we can. All you have to do is re-booster several times during the long disease challenge period. In this case, during the breeding season.

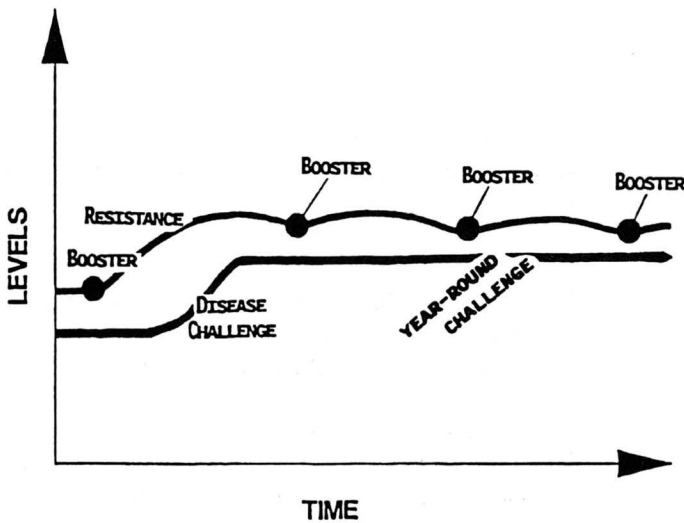
Another alternative would be to select a vaccine with

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**Adult cow cycle with a year-round breeding season.**



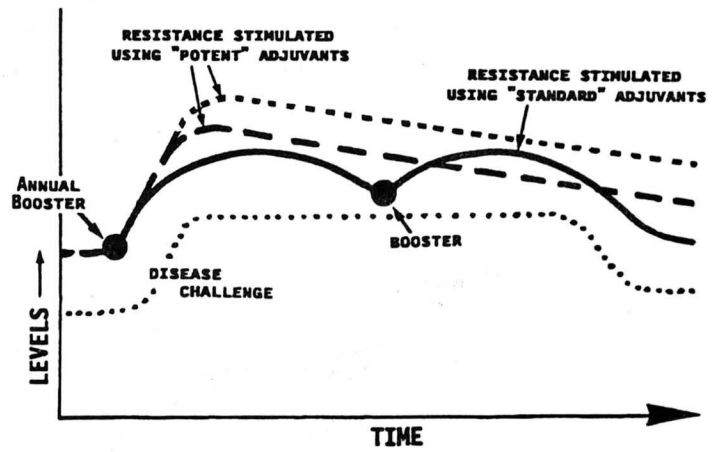
**Year-round disease challenges may require multiple boosting to provide a sustained level of adequate resistance.**



an adjuvant that provides a longer “depot-effect” thus prolonging the antigenic stimulus to the body. This results in higher/prolonged blood antibody levels in the animal; thought to be indicative of higher/prolonged resistance levels.

A good rule-of-thumb: the longer the “depot-effect” the higher the resistance level or the longer the resistance level and the **higher-the-price**. Many management systems will allow you to booster vaccinate at the needed time with a vaccine that has a less expensive adjuvant, whereas other management systems may require vaccines with the more expensive adjuvant.

**Selecting a more effective adjuvant may avoid having to use additional boosters during the extended challenge period.**



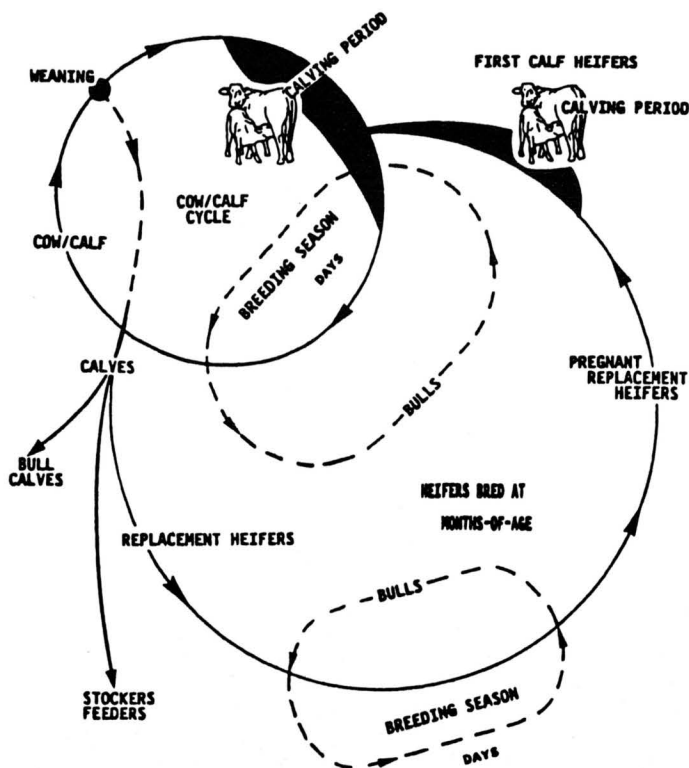
**DISEASE CHALLENGES** include infectious diseases, parasite diseases, nutritional diseases, toxic diseases, and many more. When thinking of disease challenges, don’t get caught thinking only of diseases that will kill cattle; think in terms of diseases that also reduce production and reproduction, are a threat to a fetus, and are a danger to new-born calves. Herd health is to prepare today for what may or will occur tomorrow; herd health is “preventative” medicine, not “fire-engine” medicine.

Whether it be the adult cow herd, the bull battery, the calf crop, or the replacement heifers, a health program for the entire herd can be designed that will interact between each group. All you need to do is:

1. Keep it simple:
  - Recognize the **DISEASE CHALLENGES**
  - Know when they **OCCUR**
  - Then **RAISE** the **RESISTANCE** &/or **REDUCE** the **CHALLENGE**
2. Understand your **BEEF CATTLE CYCLES**
3. Make the health **FIT** the **CATTLE OPERATION**.

The first step in designing a preventive herd-health program for a particular beef herd is to “**understand the beef cattle cycles**”. How do the cycles for the different classes within the herd interact? A one-page graphic representation of the beef herd can be very advantageous, not only for the veterinary practitioner but for the herd managers as well. Beef cows and breeding bulls function in 12-month cycles rather than linear calendars; replacement heifers enter cycles of 24 to 36 months duration depending upon age of breeding. Graphically represent the herd as overlapping circles, eclipses and curves; showing where the different classes overlap, are combined, or separated. Also label, within each class, important periods such as the “calving period”, “breeding season”, and

“weaning”; adding dates to these occurrences and activities greatly enhance the graphic representation. The following diagram is an example of a “blank” one-page overview that is normally used on a beef herd with a breeding season of 100-110 days. When the dates have been added for the beginning and end of the calving periods and breeding seasons, the date of calf weaning, and the age at which replacement heifers are bred, the one-page overview provides a quick reference as to how the herd is managed.



The next step in designing a preventive herd-health plan is to recognize the disease challenges to which the herd is exposed or can be potentially exposed to. In Florida, the following list of disease challenges are routinely considered; however, not all ranches are exposed or potentially exposed to all the listed disease challenges and will be deleted as required.

### POTENTIAL DISEASE CHALLENGES ON THE BEEF HERD

- Infectious Bovine Rhinotracheitis (IBR)
- Bovine Virus Diarrhea (BVD)
- Parainfluenza Virus - 3 (PI-3)
- Bovine Respiratory Syncytial Virus (BRSV)
- Haemophilus Somnus
- Pasteurella
- Clostridial Diseases (7-way Blackleg)
- Redwater
- G/H/P/I/C Leptospirosis
- Anaplasmosis

- Vibriosis
- Trichomoniasis
- Brucellosis
- E. coli Scours
- Rotavirus
- Coronavirus
- G. I. Worms
- Lung Worms
- Grubs
- Lice
- Flukes
- Coccidia

Rather than explain each disease in detail with a beef producer, categorize the potential disease challenges into 4 basic categories, each signified with a number and a brief explanation as to how the category affects the herd or what can be accomplished by controlling the category of disease challenges. The disease challenges, for all classes of cattle, are categorized as follows:

### CATEGORIZATION OF POTENTIAL DISEASE CHALLENGES

1. **Survival & Development:**  
Includes those challenges that cause death or retard development and growth or substantially reduce performance.
2. **Reproduction & Fetus Protection:**  
Includes challenges that will interfere with the reproductive performance of the animal or place the fetus of a pregnant female at risk.
3. **Protection for the New-Born Calf Provided Via “Fortified” Colostrum:**  
Challenges that attack the new-born calf.
4. **Disease Barrier for the Herd:**  
Diseases challenges which we must either keep at a “subclinical” stage or prevent from being introduced into the herd.

Next, identify the category of disease challenges that affect each class of cattle and list each disease that fits within the category. Remember the first 2 components of the rule “KEEP IT SIMPLE”: a) identify the disease challenges and b) know when they occur. To illustrate how the rules apply, use a table listing the categories of disease challenges affecting a class of cattle and each challenge associated with the category. By using a “blow-up” of representative portions of the herd cycle, graphically portray the occurrence of the disease challenge categories.

For the adult cow, defined as any female that has calved, include all 4 categories of disease challenges, list the individual challenges associated with each category, and then graphi-

cally illustrate where the challenges occur on a "blow-up" of the adult cow cycle. The following table and figure illustrate the categorized disease challenges and when they occur in the adult cow herd. The larger the physical size (height & width) of the number on the diagram, the more important the respective disease challenge category at that time of the cycle.

CATEGORIZATION OF POTENTIAL DISEASE CHALLENGES on the ADULT COW that affect:

1 Survival & Development	2 Reproduction & Fetus Protection	3 * Protection for The New-born Calf	4 Disease Barrier For the Herd
	IBR BVD	IBR BVD PI-3	IBR BVD PI-3
	H. somnus	H. somnus Pasteurella 7-Way Blackleg Redwater	H. somnus Pasteurella 7-Way Blackleg Redwater
Redwater	Leptospirosis-5	Leptospirosis-5	Leptospirosis-5
Anaplasmosis	Anaplasmosis Vibriosis Trichomoniasis Brucellosis		Anaplasmosis Vibriosis Trichomoniasis Brucellosis
		E. coli Rotavirus Coronavirus	
G. I. Worms Lung Worms Grubs Lice Flukes	G. I. Worms Lung Worms Grubs Lice Flukes		G. I. Worms Lung Worms Grubs Lice Flukes Coccidia

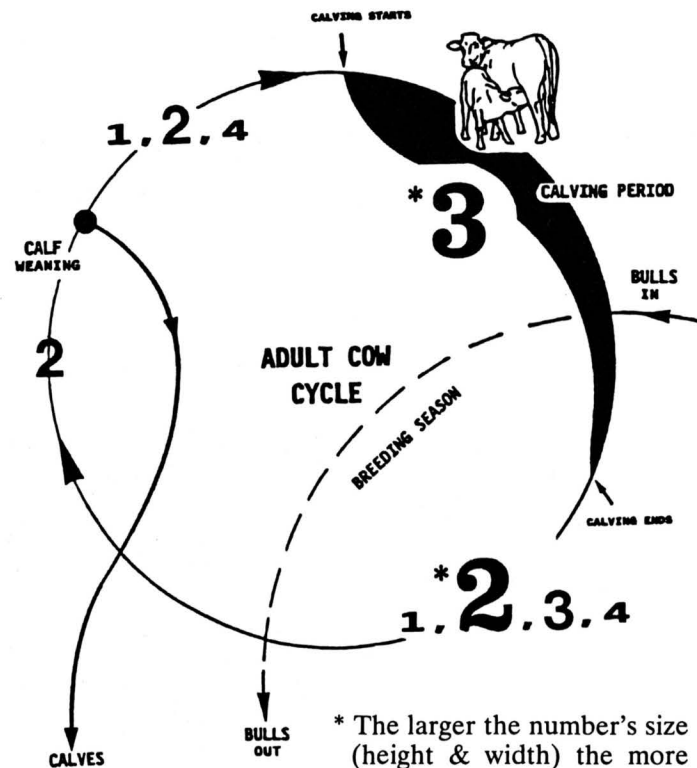
\* Provided Via "Fortified" Colostrum.

When planning a health program for the calves, survival and development are the greatest concerns. Therefore, consider categories #1 (Survival & Development) and #3 (Protection for the new-born calf via "fortified" colostrum) and list the individual disease challenges that are associated with the two categories. Next, graphically illustrate when the challenge categories occur on a "blow-up" of the calf portion of the herd cycle. The following table and diagram illustrate the categorized disease challenges and when they occur in the calves.

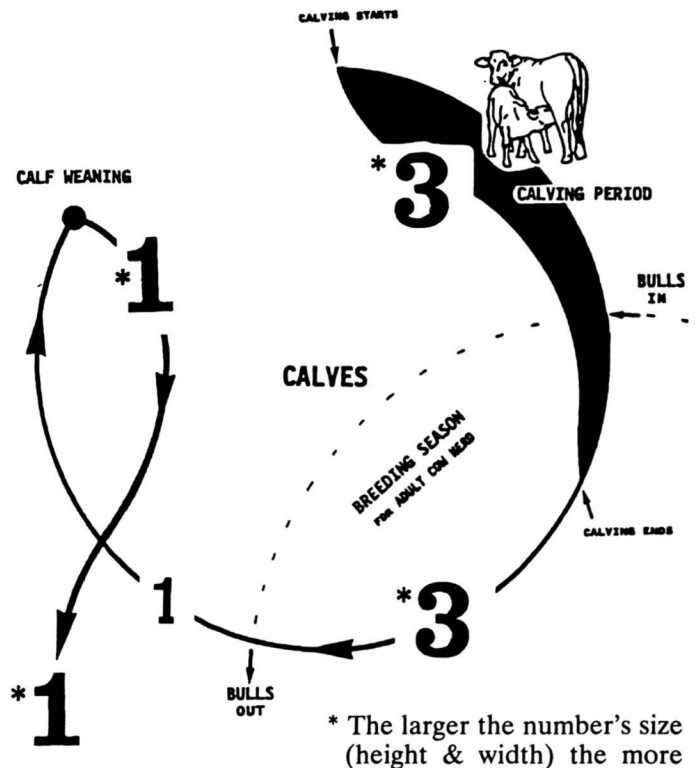
CATEGORIZATION OF POTENTIAL DISEASE CHALLENGES ON THE CALVES that affect:

1 Survival & Development	2 Reproduction & Fetus & Protection	3 * Protection for The New-born Calf	4 Disease Barrier For the Herd
IBR BVD PI-3 BRSV		IBR BVD PI-3	
H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5		H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5	
G.I. Worms Lung Worms Grubs Lice Flukes Coccidia		E. coli Rotavirus Coronavirus	
	Not applicable		Not applicable

\* Provided Via "Fortified" Colostrum.



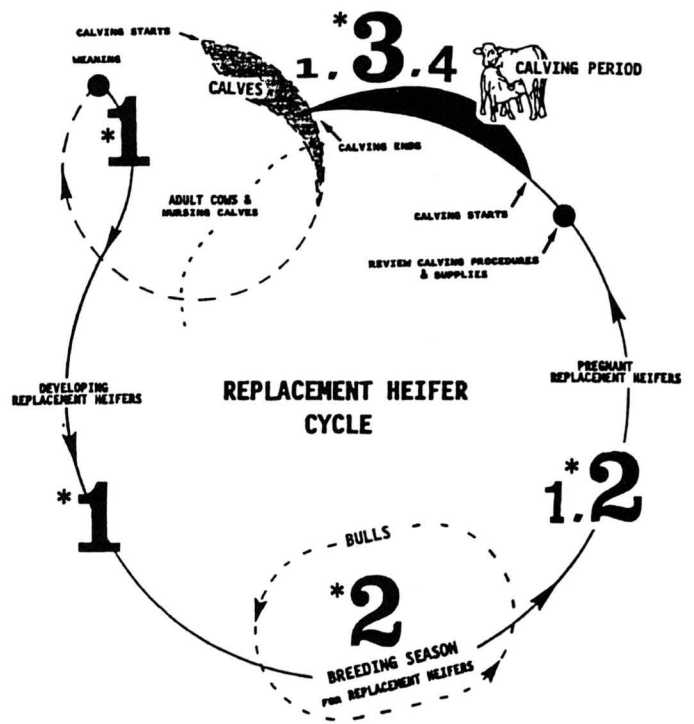
\* The larger the number's size (height & width) the more significant is the respective disease challenge category, ie, a large #3 is more important than a small #1.



\* The larger the number's size (height & width) the more significant is the respective disease challenge category, ie, a large #3 is more important than a small #1.



Health programs for the replacement heifers, much like the adult cows, include consideration for all 4 categories of disease challenges. However, unlike the adult cows, category #1 (Survival & Development) is a major issue in the young heifer. As the heifer develops and begins to be looked upon as a breeding animal, categories #2 (Reproduction & Fetus Protection) and #3 (Protection for the new-born calf via "fortified" colostrum) become very important with category #1 decreasing in significance. For the replacement heifer, the implementation of coverage against categories 1, 2 & 3 in reality have provided coverage for category #4 (Disease Barrier for the Herd). As the replacement heifer develops into an adult cow, the same disease challenges will continue to occur; however, the affect of those challenges may change. Once a heifer reaches adulthood, the chances of her dying from certain infectious diseases is greatly reduced. ONLY the REASONS to PROTECT her against disease challenges changed; the NEED to protect her remains. The following table and diagram illustrate the categories of disease challenges, the diseases associated with each category, and the occurrence of the challenges in the replacement heifer cycle.



\* The larger the number's size (height & width) the more significant is the respective disease challenge category, ie, a large #3 is more important than a small #1.

CATEGORIZATION OF POTENTIAL DISEASE CHALLENGES on the REPLACEMENT HEIFERS that affect:

1 Survival & Development	2 Reproduction & Fetus Protection	3 *Protection for The New-born Calf	4 Disease Barrier For the Herd
IBR BVD PI-3 BRSV H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5	IBR BVD  H. somnus  Leptospirosis-5 Anaplasmosis Vibriosis Trichomoniasis Brucellosis	IBR BVD PI-3  H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5  E. coli Rotavirus Coronavirus	IBR BVD PI-3 BRSV H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5 Anaplasmosis Vibriosis Trichomoniasis Brucellosis
G. I. Worms Lung Worms Grubs Lice Flukes Coccidia	G. I. Worms Lung Worms Grubs Lice Flukes		G. I. Worms Lung Worms Grubs Lice Flukes Coccidia

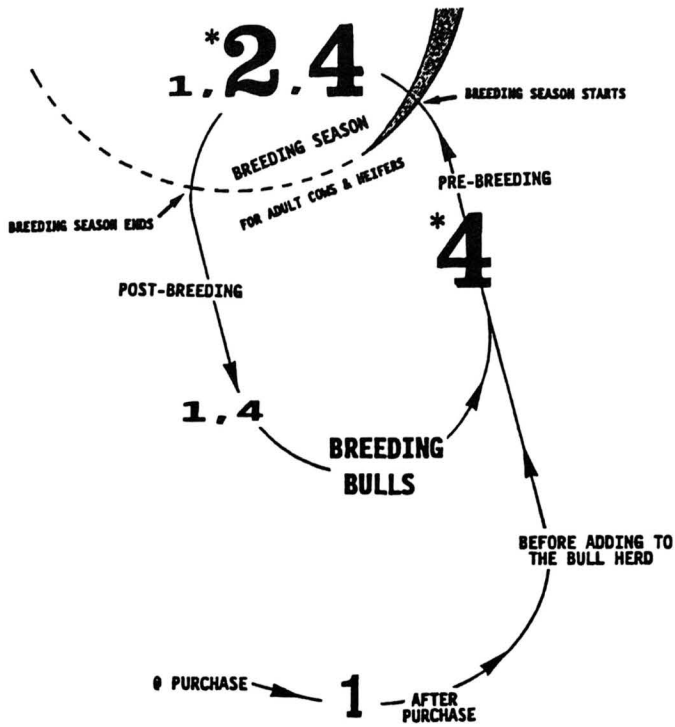
\*Provided Via "Fortified" Colostrum.

In most commercial beef herds, new bulls are purchased each year to provide a continuing improvement of genetic traits and to prevent "inbreeding". Because the bulls originate outside the herd, category #1 challenges (Survival & Development) are important issues immediately after purchase and category #4 challenges (Disease Barrier for the Herd) become major considerations when the new bulls join the existing bull battery and breeding females. Finally, category #2 (Reproduction) occurs when the bulls are added to the breeding females. Category #1

challenges (Survival & Development) become less important after the bulls have been with the herd for several seasons. The following table and diagram illustrate the categories of disease challenges, the diseases associated with each category, and the occurrence of the challenges in the breeding bull cycle.

CATEGORIZATION OF POTENTIAL DISEASE CHALLENGES ON THE BREEDING BULLS that affect:

1 Survival & Development	2 Reproduction	3 Protection for The New-Born Calf	4 Disease Barrier For the Herd
Redwater Anaplasmosis  G.I. Worms Lung Worms Grubs Lice Flukes	   Vibriosis Trichomoniasis Brucellosis  G.I. Worms Lung Worms Grubs Lice Flukes	          Not applicable	IBR BVD PI-3 BRSV H. somnus Pasteurella 7-Way Blackleg Redwater Leptospirosis-5 Anaplasmosis Vibriosis Trichomoniasis Brucellosis  G.I. Worms Lung Worms Grubs Lice Flukes Coccidia



\* The larger the number's size (height & width) the more significant is the respective disease challenge category, ie, a large #3 is more important than a small #1.

Be sure to design the health program to “fit the management” of the herd; it is extremely difficult to begin a health program by requiring numerous management changes. Management changes can come later; concentrate on trying to make the health program fit the existing management. Basically, the information needed from the producer to *begin* drafting a preventative health program is:

- Dates that the breeding season begins and ends in the cow herd?
- Predominant breed of cattle in the herd.
- When are cows gathered for routine processing. Remember that cows are gathered when their nursing calves are gathered?
- What is the anniversary date for the herd's Brucellosis Free Certification?
- Are calves normally “creep” fed prior to weaning?
- When are calves routinely worked? Remember that nursing calves are gathered when the brood cows are gathered for processing.
- Approximate date of calf weaning.

- Is ownership retained on weaned feeder calves or are the feeder calves marketed through a “com-mingled” market system or “direct” marketing system?
- Age at which replacement heifers are bred.
- Dates that the breeding season begins and ends in the replacement heifers?
- Are breeding bulls purchased or raised from herd calves?
- Are there any diseases that have been a problem in the past?

The veterinarian that has been involved with this operation should know what disease challenges must be guarded against. Be sure to make a list of the challenges and categorize them into types of challenges. Construct your cycles, add the appropriate dates, and mark the locations when the respective class of cattle are gathered or worked. The big question is: are the times cattle are gathered conducive to adding an adequate preventive medicine program to the herd? To answer this, all you need to remember are the rules to **KEEP HEALTH SIMPLE:**

- **Recognize the DISEASE CHALLENGES**
- **Know When They OCCUR**
- **Then RAISE the RESISTANCE &/or REDUCE the CHALLENGE**

If the cattle working times, designated “Working Windows, allow you to follow these rules, then you can effectively design an adequate preventive medicine program for the herd.

For demonstration purposes, the following 5 diagrams represent a simple health program that has been designed for a 2500 head commercial cow-calf operation in south Florida. The following information was gathered in an interview with the manager of this operation:

- Adult cows are bred from February 1 through May 22. (calculates to 110 day breeding season)
- The predominant breed of cows is Hereford (average length of gestation = 285 days). Calving season for the adult cows begins on November 13 and lasts through March 3.
- Cows are routinely processed in September following calf weaning. Cows are also gathered at calf processing in March and June.
- October 5 is the anniversary date for the herd's Brucellosis Free Certification.
- The calves *are not* “creep” fed prior to weaning.

- Calves are routinely worked in March, June and at weaning in September.

- September 1 is the approximate date of calf weaning.

- The calves are usually contracted and are shipped directly to an out-of-state buyer.

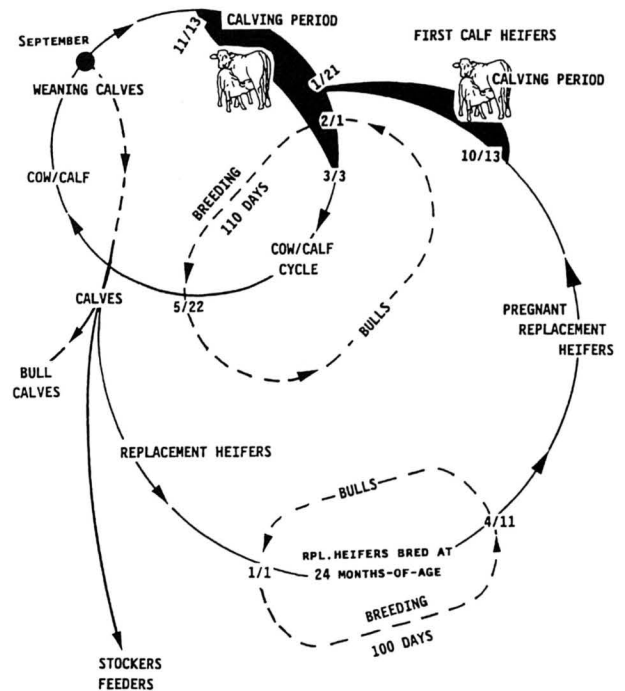
- Replacement heifers are bred to calve as 3 year-olds (bred at approximately 24-26 months of age)

- Breeding of replacement heifers begins 31 days before the cow herd on January 1. The heifers' breeding season last through April 11 which calculates to the 100 days in length. Heifer calving begins October 13 and lasts through January 21 for 285 days gestation.

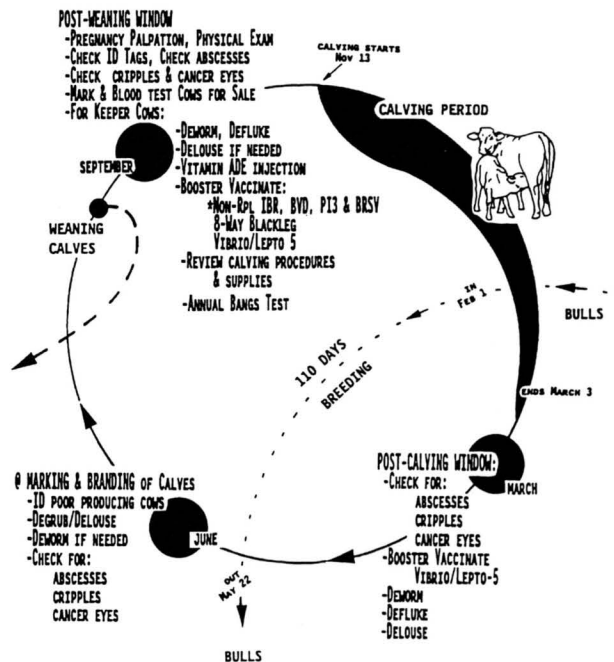
- Breeding bulls are purchased for this operation.

- Redwater, vibriosis, and leptospirosis have been a problem in the cow herd. Purchased bulls have experienced severe challenges of anaplasmosis. Nursing calves have died with blackleg and weaned calves have exhibited pneumonia problems after shipping; just recently, BRSV was diagnosed in the shipped calves.

## John Doe Ranch "OVERVIEW" of BEEF CATTLE CYCLES



## John Doe Ranch ADULT COWS' CYCLE & WORKING WINDOWS



Note: Testing for Brucellosis Recertification must be conducted within 60 days of the *Original Certification* Anniversary date. (October 5, 1985)

\* Non-Replication Viral Vaccines:  
Killed, Chemically Altered or  
Certain MLV Vaccines (ie: BRSV)

Based upon history of surrounding herds and personal experience, the producer and veterinarian considered the following list of:

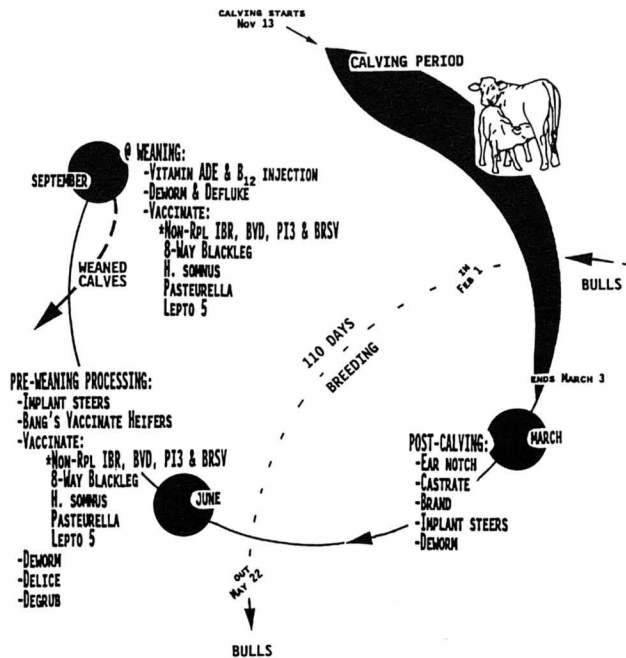
### POTENTIAL DISEASE CHALLENGES ON THE BEEF HERD

**Infectious Bovine Rhinotracheitis (IBR)**  
**Bovine Virus Diarrhea (BVD)**  
**Parainfluenza Virus - 3 (PI-3)**  
**Bovine Respiratory Syncytial Virus (BRSV)**  
**Haemophilus somnus**  
**Pasteurella**  
**Clostridial Diseases (7-Way Blackleg)**  
**Redwater**  
**G/H/P/I/C Leptospirosis**  
**Anaplasmosis**  
**Vibriosis**

**Trichomoniasis**  
**Brucellosis**  
**E. coli Scours**  
**Rotavirus**  
**Coronavirus**  
**G.I. Worms**  
**Lung Worms**  
**Grubs**  
**Lice**  
**Flukes**  
**Coccidia**

Individual animal examination and history of diseases in the general area allowed deletion of certain disease challenges from the initial herd health plan. To allow the herd health to be managed using this plan, the herd first had to be properly vaccinated for appropriate diseases and treated for external and internal parasites. For the adult cows and bulls, the initial vaccinations were administered during "calf working times".

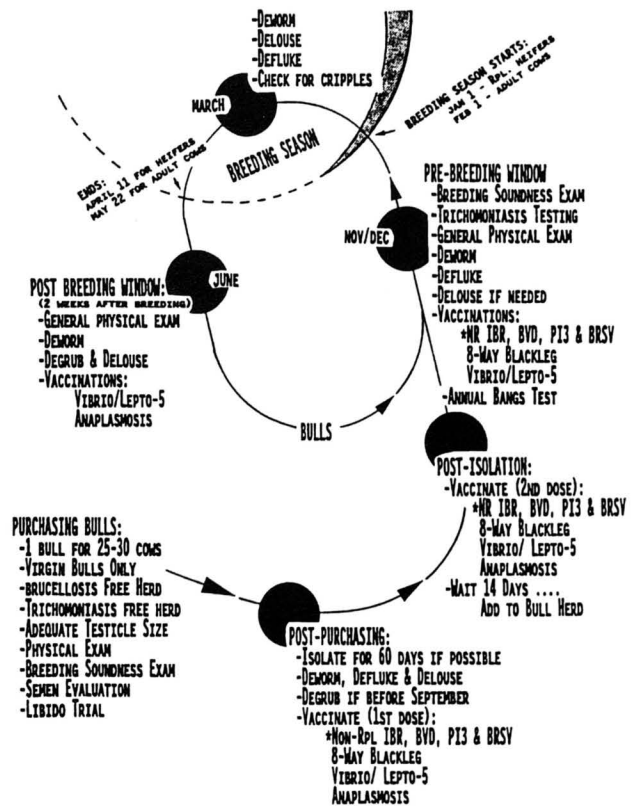
## John Doe Ranch — CALF PROCEDURES



\* Non-Replicating Viral Vaccines:  
 Killed, Chemically Altered or  
 Certain MLV Vaccines (ie: BRSV)

## John Doe Ranch

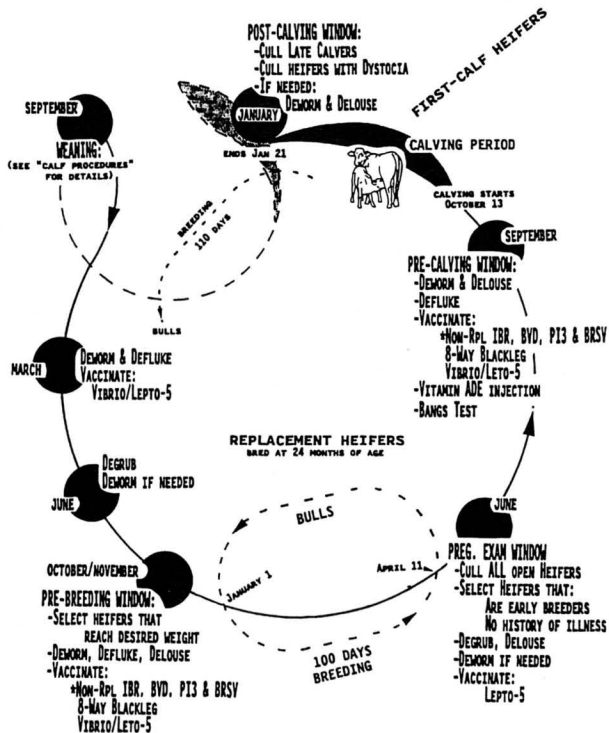
### BREEDING BULL'S CYCLE & WORKING WINDOWS



\* Non-Replicating Viral Vaccines:  
 Killed, Chemically Altered or  
 Certain MLV Vaccines (ie: BRSV)

## John Doe Ranch

### REPLACEMENT HEIFER'S CYCLE & WORKING WINDOWS



Preventive health programs presented in this manner have been easily understood, easily followed, and easily referenced. The alternatives, which include lengthy manuscripts, confusing calendars, and excessive detail are thought as, at least in our area, cluttered or too "busy". Most beef cattle producers will not use the "busy" health plans. Health programs designed and presented in this manner allow the beef producers to concentrate on improving herd genetics, pasture management, and marketing calves.

### TO DESIGN PREVENTIVE HEALTH PROGRAMS:

1. Keep it simple:
  - Recognize the DISEASE CHALLENGES
  - Know when they OCCUR
  - Then RAISE the RESISTANCE &/or REDUCE the CHALLENGE
2. Understand your BEEF CATTLE CYCLES.
3. Make the health FIT the CATTLE OPERATION.

The Editor wishes to thank Dr. Paul Johnson for collecting all the Practice Tips so that they could be included here.