

you are here: [home](#) → [columns](#) → [beef talk](#) → beef talk: proper achievement of immunity in cattle a good goal

navigation

Links

- [News Home](#)
- [Columns](#)
- [Archives](#)

Feeds

- All News [RSS](#)
- BeefTalk [RSS](#)
- Dairy Focus [RSS](#)
- Prairie Fare [RSS](#)
- Economics [RSS](#)
- Renewable Accounts [RSS](#)
- Small-business Savvy [RSS](#)

Twitter

- On Twitter follow [NDSU Ag News](#)

BeefTalk: Proper Achievement of Immunity in Cattle a Good Goal

A good immune system protects cattle against disease-causing pathogens.

By Kris Ringwall, Beef Specialist

NDSU Extension Service

All dogs need a rabies vaccination regardless of condition, management or feeding program because the only defense against rabies is the maintenance of a good immune system. The need for a good immune system also is true for cattle.

This discussion is for all living things, but for simplicity, let's stick to cattle or those critters found near cattle.

Recently, our dogs received their vaccinations. The rabies vaccination for dogs is the most accepted

Images



document Actions

4-H state fair



[4-H State Fair Results](#)

columns

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[BeefTalk: BeefTalk: Proper Achievement of Immunity in Cattle a Good Goal](#) (2016-06-09) A good immune system protects cattle against disease-causing pathogens. [FULL STORY](#)

[Prairie Fare: Prairie Fare: Future Empty Nest Calls for Food Preparation Changes](#) (2016-06-09) When cooking for one or two, choose recipes that are easy to divide mathematically. [FULL STORY](#)

vaccination protocol when the discussion of animal vaccinations comes up, and it's repeated throughout the dog's lifetime. Some owners will grumble when the renewal time comes up, but few actually will not proceed with the vaccination.

Recently, while at the veterinarian's office, a truck pulled up. The rambunctious pack of dogs leapt around in the truck box, barking at a fairly frantic pace. In the end, they all were vaccinated and life went on.

So why all this discussion about the pros and cons of cattle vaccinations? Being confused by the claims of pharmaceutical companies is easy, but in reality, the focus needs to be on the goal, the achievement of the desired level of immunity within the herd.

Understanding the principals involved is difficult. Textbooks with complicated concluding statements are written yearly on vaccinations. But keep the goal in mind: Immunity is not absolute and, just like in the rabies vaccination, does not last forever. Immunity changes constantly and is different for each and every pathogen with which cattle may come into contact.

To further complicate achieving the goal, individual cattle will differ in their level of immunity to the same pathogen. Plus, one animal may receive a much greater exposure than another animal. No system is perfect.

divide mathematically. [FULL STORY](#)

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The goal is to build an acceptable level of herd immunity to the disease-causing pathogens so outbreaks are isolated cases and the cattle population remains healthy. A broad vaccination program builds immunity within the general population, effectively limiting the capacity of pathogens to spread freely.

However, this does not mean the total absence of pathogens nor the elimination of sporadic outbreaks of a disease, even though vaccination protocols are applied by the producer in concert with the local veterinarian. The goal is to limit susceptible cattle, thus limiting the spread of the disease.

Proper management enables cattle to withstand the daily issues of maintaining health and vigor, but a properly prepared and challenged immune system is critical to total herd resistance to local pathogens.

The basic concept of immunity is relatively simple. The body reacts to foreign objects by developing defensive antibodies. Whenever I bring up the topic of immunity, I cannot help but be reminded of the old game of Pac-Man, a computer game created in 1980 by Toru Iwatani while working for Namco, a Japanese company.

Pac-Man was a circular object with a large mouth that had only one function: catch and consume little dots. Pac-Man would move up and down

channels not much different from our circulatory system's arteries or veins, systematically removing all the dots. Pac-Man, a large body chasing little dots, was not that much different from nature: the large "antibody" in the circulatory system chasing and eating small dotlike intruders.

The key to good health is to have the proper Pac-Man, or antibody, present within the living system to catch all the dots or invading bugs: viruses, bacteria or other foreign substances.

Each antibody (or immunoglobulin, if you like big words) is very specific, only consuming or catching one type of foreign bug. A good vaccination protocol, established by the local veterinarian, encourages the Pac-Man-enabling process and preps the cattle in case of future exposure.

Did I say exposure? Yes, I did. Unfortunately, vaccine discussions often fail to include exposure. Let's go back to the vaccination of dogs for rabies. If a dog never is exposed to rabies, was the vaccination ineffective? No, the vaccine established immunity in case the dog was exposed to rabies in the future. What are the odds of the dog being exposed?

Likewise, if all dogs were not vaccinated, what would be the odds of an increased incidence of rabies? We know the answer. If no dogs are vaccinated, the incidence of rabies would go up.

Thus, get some input from the local veterinarian.

The vaccine primes the system so someday, in the event of a real invasion, antibodies are ready because an effective immunity has been established.

Contact your local veterinarian, get started, get prepared and establish an immunity goal appropriate for your region and your desired calf market for your best chance of calf survival in the real world.

May you find all your ear tags.

For more information, contact your local NDSU Extension Service agent (<https://www.ag.ndsu.edu/extension/directory>) or Ringwall at the Dickinson Research Extension Center, 1041 State Ave., Dickinson, ND 58601; 701-456-1103; or [✉kris.ringwall@ndsu.edu](mailto:kris.ringwall@ndsu.edu).

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Attachments



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