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Vaccines for Farrowing Operations

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Routine vaccination is an essential part of a good swine herd health management program because some economically important diseases are extremely difficult to keep out and are commonly present in many herds. Four swine diseases that fit into this category and for which effective vaccines exist are erysipelas, leptospirosis, parvovirus, and colibacillosis.

Erysipelas

The bacterium *Erysipelothrix rhusiopathiae* causes the disease erysipelas. This organism is spread through oral and nasal fluids and feces and is carried by many healthy swine. Carrier swine and the lack of a reliable blood test make it nearly impossible to keep *E. rhusiopathiae* out of herds. Erysipelas is an economically important disease because it can cause arthritis and death losses in the herd. Erysipelas is a zoonotic disease because it can be transmitted from swine to people, usually causing a localized skin rash.

An erysipelas vaccination program for the breeding herd starts with injection of gilts and boars at 6 1/2 months of age or older. If a killed vaccine or bacterin is used, give a second injection 3 to 4 weeks later, before breeding. Give booster vaccinations to sows on the day of weaning, before rebreeding. Boars should receive a booster vaccination every 6 months. Young pigs (4 to 8 weeks of age, depending on the brand of the vaccine) should receive two vaccinations 3 to 4 weeks apart with an erysipelas bacterin. Pigs vaccinated at a young age and then selected for breeding stock should be revaccinated following the breeding herd vaccination program. Avirulent or "tamed" *E. rhusiopathiae* live vaccines are also available for use in breeding swine and pigs. Always follow the label instructions for vaccine administration and withdrawal times.

One reason producers may want to use live erysipelas vaccines is convenience; some brands may be given orally in the drinking

water. However, many veterinarians prefer to use killed vaccines or bacterins because bacterial shedding from swine vaccinated with live vaccine may infect other swine on the farm when *E. rhusiopathiae* from the vaccine reverts or "changes back" to the original disease-causing bacterium. This reversion theory is hard to prove, but erysipelas outbreaks have been observed in herds vaccinated with avirulent live vaccines. Restoration of the disease-causing ability of *E. rhusiopathiae* in killed vaccines or bacterins is not a concern. Examples of bacterins are ER Bac®, Rhusigen®, E-Bac™, and EryMune-C®. Examples of avirulent live vaccines are ORAVAC-ERY® and EVA®.

Leptospirosis

After *Leptospira* infection, swine develop a chronic carrier state and shed the bacteria in their urine. Infected swine urine is a major source of infection for normal pigs. Non-infected pigs may also become infected through feed and water contaminated by the urine of infected rodents, and then they become sources of spread. Leptospirosis can cause abortion, infertility, mummified pigs, and stillborn or weak pigs; so it is an economically important disease. Leptospirosis can also be a zoonotic disease, causing either severe liver disease or flu-like symptoms in people.

A leptospirosis vaccination program follows the same schedule as erysipelas, except young pigs are not vaccinated. All leptospirosis vaccines for swine are bacterins. Always use a 6-way bacterin (which includes six varieties of *Leptospira* organisms), because *L. pomona* and *L. bratislava* are the most common causes of disease in swine and only 6-way bacterins include *L. bratislava*. Brativac-6™ is an example of a leptospirosis bacterin that includes all 6 varieties. A combination bacterin such as FarrowSure B® provides breeding swine protection against leptospirosis (6-way) and erysipelas.

Parvovirus

Parvovirus is extremely common in most swine herds and is a major cause of embryonic death, mummified pigs, and temporary infertility. Usually producers do not attempt to keep this virus out of the herd, even though an accurate blood test is readily available. The virus spreads primarily through manure. Parvovirus disease mainly occurs in pregnant gilts and first-litter sows infected between breeding and 65 to 70 days of gestation. Before parvovirus was recognized as an important reproductive viral disease in swine, the term "SMEDI Syndrome" (SMEDI stands for swine mummification, embryonic death, and infertility) was used to describe reproductive losses from enterovirus infection. It was later discovered that parvovirus infection was a much more important cause of SMEDI-like disease than the enteroviruses. However, swine parvovirus infection usually does not cause stillborn pigs.

Since parvovirus is common and infection in every pig is almost certain, the main method for preventing economic loss from this disease is to produce immunity in gilts before breeding through exposure to manure, injectable vaccination, or both. Colostral antibodies may interfere with the development of natural or vaccine immunity in gilts up to 6 months of age. Natural immunity also varies because the level of parvovirus in the manure is very variable. For the best natural immunity in gilts, delay breeding until 7 1/2 to 8 months of age and provide constant exposure to manure from various breeding and finishing pens on your farm. A parvovirus blood test after 6 1/2 months of age and before the first breeding can verify the presence of natural immunity. Testing on a routine basis may be impractical, but sampling a percentage of gilts throughout the year can indicate whether or not vaccination is necessary. However, parvovirus vaccine is economical and readily available in combination with leptospirosis and erysipelas bacterins, so most producers routinely vaccinate breeding swine for parvovirus without testing them first.

Give boars and gilts two doses of parvovirus vaccine about 3 to 4 weeks apart before the first breeding. Do not give the first dose before 6 1/2 months of age, because colostral antibodies can interfere with the development of immunity in response to the vaccine. Considering parvovirus and other

reproductive factors, it is best not to breed gilts before 7 1/2 months of age and boars before 8 months of age. This is because most breeding swine will be developing natural immunity to parvovirus by this age, making them less susceptible to economic loss from the disease, whether they are vaccinated or not.

As part of your routine vaccination program for parvovirus, give a booster vaccination to sows at each weaning (on the day of weaning). Give booster vaccinations to boars every 6 months. Parvo-Vac® is an example of a single-product killed virus vaccine, and FarrowSure B® is a killed parvovirus, 6-way leptospirosis and erysipelas combination vaccine.

Colibacillosis

E. coli diarrhea, or colibacillosis, is possibly the most common economically important disease of baby pigs. There are many types of *E. coli* bacteria and many sources of infection other than swine; these sources include rodents, cats, dogs, birds, people, soil, and water—in other words, almost everything in the pigs' environment can be a source of infection.

Four types of *E. coli* cause the majority of diarrhea in pigs. These types can "stick" to the intestinal lining, secrete a toxin, and cause scouring. The stickiness is due to microscopic "pili" or hair-like projections on the outer surface of the bacteria. These "piliated" types (F4[K88], F5[K99], F6[987P], and F41[Type 1]) are so named because of these tiny hair-like projections.

A practical *E. coli* scours vaccination program includes injecting pregnant females twice before farrowing with an *E. coli* bacterin/toxoid (killed bacterial vaccine plus inactivated *E. coli* toxin) or bacterin. Litterguard LT® is an example of an *E. coli* bacterin/toxoid. Pilimune®, Porcimune® and Scourmune® are examples of *E. coli* bacterins. Vaccination time (depending on the brand of vaccine) ranges from 4 to 7 weeks before farrowing for the first dose and 2 to 3 weeks before farrowing for the second dose. Give at least one booster vaccination 2 to 3 weeks before subsequent farrowings. The goal of this vaccination schedule is for the sow's immunity to be transferred through her milk in the form of an antibody which coats the *E. coli* bacteria in the pigs' gut and prevents them from sticking, secreting toxin, and causing diarrhea. Pre-farrowing vaccination is mainly effective for the first 14 days of the pigs' life; it is ineffective if the sow lactates poorly or if the pigs do not nurse.

Summary

Routine vaccination is necessary to control economically important swine diseases that are difficult to avoid and for which relatively inexpensive and effective vaccines exist. Erysipelas, leptospirosis, and parvovirus vaccinations are given to breeding animals at 6 1/2 months of age, 3 to 4 weeks later, and at weaning, or every 6 months. Erysipelas vaccine is also administered to young pigs. At a minimum, your vaccination program should include vaccination for erysipelas, leptospirosis, and parvovirus in breeding swine and erysipelas in pigs. Colibacillosis may be a common problem in pigs in the first week or two of life. If so, give *E. coli* vaccinations to pregnant females twice before the first farrowing and at least once before subsequent farrowings.

One vaccination program will not fit all farrowing operation situations. Your veterinarian can recommend a specific vaccination program for your individual breeding herd.

For More Information

Some of the information in this publication was adapted from these sources.

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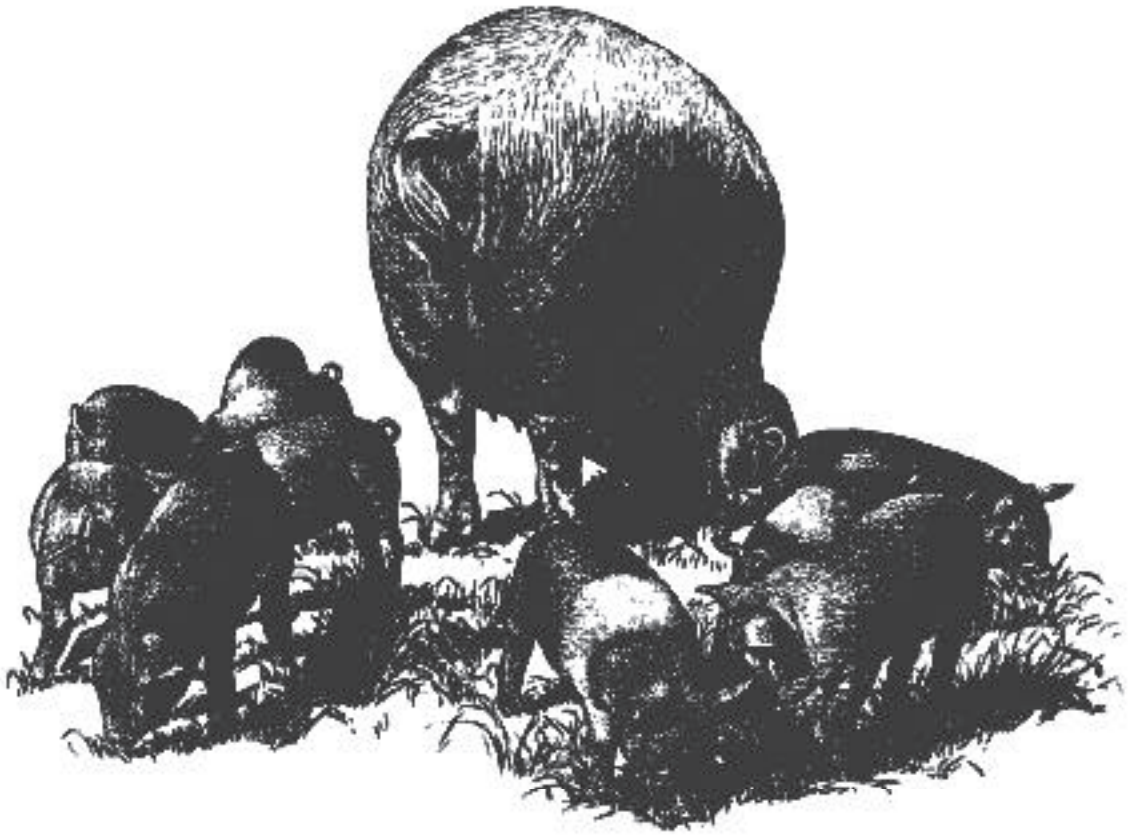

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