

## THE TIMES THEY ARE A-CHANGIN':

As those who follow our newsletters and emails are aware, recent and emerging research has begun to confirm observations made over the past few decades by producers who have eradicated OPPV from their flocks. (A related paper from Dr. Lynn M. Herrmann-Hoesing et al, titled OVINE PROGRESSIVE PNEUMONIA VIRUS IS TRANSMITTED MORE EFFECTIVELY VIA AEROSOL NEBULIZATION THAN ORAL ADMINISTRATION, was published in September 2012 and can be found on our "Library" page.)

In a nutshell, this work has the potential to greatly facilitate eradication efforts. OPP Society member Clark BreDahl summarized it nicely in his May 2012 column for THE SHEPHERD magazine, repeated here for any who may have missed it.

## Dispatch from Mormon Trail Farm....

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A big announcement came out of the U.S. Meat Animal Research Center at Clay Center, NE last week (April 9) that could have a major impact on plans to grow the American sheep industry.

In a nutshell, USMARC scientists say they have identified genetic markers in sheep that relate to their susceptibility to ovine progressive pneumonia (OPP). Results to date from over 8,000 sheep tested have been so positive that USMARC is collaborating with a private company, GeneSeek®, based in Lincoln, NE, to develop a commercial genotyping test which

could be available to producers by the time you read this (as early as May, 2012).

Researchers Mike Heaton, Kreg Leymaster, et al., have confirmed that particular gene sets in sheep convey at least partial resistance to OPP, and one very rare combination could possibly impart full immunity. Though these findings are encouraging, the ARS scientists warn that OPP lentiviruses are highly adaptable and it is not yet known if selection for the gene marker TMEM154 haplotype 1 will reduce the incidence of OPP in all flocks. More research is under way to determine if some OPP strains may have already adapted to infect sheep possessing the marker. And, the role other genes might play in conveying resistance is also being investigated.

As one who has already been down a very rocky road with OPP, I have long contended that it may very well be the most costly disease facing U.S. sheep producers. A National Animal Health Monitoring System (NAHMS) survey conducted in 2001 indicated that over 36 percent of sheep operations in 22 states surveyed were infected with OPP, and nearly one quarter of all animals tested were positive for the disease. More recent studies have shown infection rates of close to 80 percent among some western range bands.

USMARC research long ago documented a 25 percent drop in annual production from infected ewes. That study included young positive-testing ewes that may not have yet exhibited clinical symptoms. But, it did not take into account production losses which may have occurred from early culling of ewes from the flock.

Typically, OPP manifests itself in a variety of ways including mastitis and/or hard udder syndrome, reduced milk production, arthritis, increased rates of pregnancy toxemia and pneumonia, and elevated levels of "unthriftiness" in the flock. All of the above can lead to higher ewe death losses and increased rates of culling. Not all infected flocks exhibit the same set of symptoms and, thus, many producers come to accept the varied effects as a "normal" part of raising sheep. Ask anyone who has eliminated the disease from their flock if the above symptoms are "normal" and they will tell you they definitely are not!

We were among those with a distorted view of "normal" for many years. In our case, the primary symptoms revolved around udder and milking problems. We experienced very low levels of pneumonia, not much arthritis and relatively low death loss in our ewes. That may have been due to the fact that we generally started culling ewes for poor milk production by four years of age. By the time our flock reached peak infection levels in the mid-90's, it was unusual for a ewe to still be around at age 6.

We stumbled onto reality by accident. A researcher at Iowa State University was looking for sheep to use in a Bovine Viral Diarrhea project and came to us looking for a supply. The only stipulation was they had to test free of the disease first, so blood tests were drawn and analyzed from all prospective animals. Interestingly, none of the 40-some ewes tested positive for BVD, but Dr. Kaeberle mentioned in passing, "By the way, did you know over half your ewes were positive for OPP?" Rather than concern about the high percentage, my immediate reaction was "What's OPP?"

At that point, I began to learn quickly.

Our frustration finally erupted a year later when Lyn and the girls took care of nearly 75 orphan lambs from a flock of around 300 ewes. The orphans, however, really didn't tell the whole story as dozens of other lambs wandered behind their mothers malnourished and depressed.

Looking back on our own experience, it's very easy to understand why the turnover of young producers has traditionally been very high in the sheep industry. As stated earlier, many might rationalize that they were just experiencing business as usual with sheep. Still others might suspect something was wrong, but take the easy way out by loading up the whole flock and heading for town.

Even veteran Midwest producers with large commercial flocks and years of experience resorted to dire measures to rid themselves of OPP once they understood the consequences. A good friend from northwest Iowa pulled several hundred head of ewe lambs from their mothers at birth before they had nursed, raising them all on milk replacer to gain the nucleus of a "clean" flock.

Did it work? Yes, but at tremendous cost of labor, feed and lost production from ewes that might otherwise have remained in the flock a few more years. We took the easy path back by buying stock free of the disease from others who had done the hard work for us.

No doubt about it, USMARC's announcement regarding genetic predisposition to OPP is big news. But, depending on how many exceptions appear from subsequent research and testing, I think the gold standard will still be complete elimination of OPP from your flock. We are well on our way to doing it with scrapie (including flocks that do NOT possess any known genetic resistance) and we can do it with OPP, too.

In that regard, perhaps the bigger recent news regarding OPP actually came about a year ago from Lynn Herrmann-Hoesing, researcher at USDA's Animal Disease Research Unit, Pullman, WA. In an article written for the OPP Concerned Sheep Breeders' April, 2011 Newsletter, she detailed a natural suckling/contact experiment tracking 22 lambs raised by 10 six-year-old OPP-infected ewes. The results showed that only one of the 22 lambs was infected with OPP after nursing their infected mothers for a period of eight months, then weaned and isolated from any OPP infected sheep for a period of six years. That information turns on its head the old theory that the primary route of transmission for OPP is through colostrum and milk from dam to offspring.

Though this was a small study, it is a promising indication that separation at birth and artificial rearing of lambs from infected mothers is not necessary to rid a flock of OPP. If that is indeed true, it could mean that through judicious testing and timely separation of infected and uninfected sheep, a "clean" flock could be established in very short order without the huge labor demands of orphan rearing and without a pressing need to condemn desirable breeding stock to the slaughterhouse floor. My guess is that further verification of the Pullman research may be coming soon and, pending the outcome, the U.S. sheep industry can then proceed with the business of eliminating OPP from the national flock.

If that can be done, the results will quickly make all of ASI's 2+2 expansion goals seem pale by comparison. With OPP, our national weaning percentage languishes at barely a lamb per ewe per year. Without OPP, virtually all ewes should be very capable of raising twins. A decent percentage of well-nourished, prolific ewes will wean three and a few, incredibly, will raise four!

Plus, instead of retaining an extra two percent of our ewe lambs each year for breeding, we can instead save fewer and sell more by doubling the productive lifespan of our mature ewes from 4-5 years to 8-10! I, along with a host of others, know it is possible.

Why have we waited so long?

(From THE SHEPHERD magazine, May 2012)