



## Penn State Cooperative Extension Capitol Region Dairy Team

### IMMUNITY DOESN'T COME IN A BOTTLE

Dr. Arlen Mills  
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We often think that our livestock will be healthy if we can only find the right vaccine.

Vaccination is important, but natural mechanisms are an animal's first line of defense against infections. This would include things such as tears, saliva, enzymes, and the mucus lining the respiratory system. Even the skin is an important protector for the body, as it acts as a physical barrier to invasion by pathogens.

This fact becomes particularly evident as we consider the teat end in the dairy cow. Compromise the skin of the teat end and canal and mastitis results.

If a bacteria or virus gets past the physical barriers and invades the body, a second line of defense called inflammation goes into action. White blood cells attack and attempt to eat up the invaders. Dairy producers know these as somatic cells.

If these defenses are breached, the body has still another defense system which we refer to as the immune system. It is this system that we are hoping to enhance whenever a vaccine is given to our animals. When an animal is vaccinated, the body should respond by creating antibodies. But we know that this does not always occur. In studies done with feeder calves, as many as 15 percent may fail to respond and be protected when vaccinated. There are a number of possible reasons for this vaccine failure, so let's look at several major ones.

Genetics can affect the immune response. Compared to their ancestors, today's dairy cow is highly inbred. While we have selected for various production traits, we have ignored the effect on the ability to generate a proper immune response. I suspect that we may have selected for some of the reproductive problems that we have as well. The first step in solving this problem is to recognize it.

In order for cattle to respond to vaccination or fight off infections, adequate nutrition is necessary. Adequate energy, vitamins, minerals, protein, and clean water is needed. We need to be reminded that the immune system places constant metabolic demands on the cow, and it is one part of the cow which never rests.

With the adoption of total mixed rations in the dairy industry, most producers do a good job of formulating and delivering a high quality diet. However, diets may not be reformulated during periods of stress or intake may decrease as happens in the pre-fresh cow. Then nutritional shortages may occur which short-circuit the animal's ability to mount a strong immune response. Research has shown that nutrients such as copper, iron, zinc, selenium, and vitamins A and E can all have a great effect on the immune system. When one of these vitamins or minerals is deficient, it can inhibit the immune response or cause an adverse reaction to a vaccine.

We know that all cows go through some degree of immune



Dr. Arlen Mills

suppression in the week prior to freshening and for a week or two after calving. Some of this may be due to a nutritional deficiency, as the cow eats less during this critical time. But part may also be caused by hormonal changes. Estrogen rises at this time and there is research to show that estrogen may suppress the immune system.

The stress on the cow at this time also raises her level of cortisone, which is an immune-suppressor. For this reason I would not vaccinate a cow just before or soon after freshening. But any stress — such as being moved into a new pen, vaccination, hoof trimming, heat stress, and other management practices — can all interact with nutrition and the immune system in detrimental ways.

Another big immune suppressor is acidosis. In the acidotic cow, abnormal rumen bacteria produce gram-negative toxins. These toxins depress the normal function of the cells of the immune system. Cows affected by subclinical acidosis are immune-suppressed cows. The solution is obvious.

So when you have a "vaccine failure," what is to blame? Rarely in my experience is it the vaccine itself. It is usually a failure of either timing, vaccine handling, or failure to respond because of one of the factors discussed. Vaccine strategies will be discussed in a forthcoming article.

WASHINGTON, D.C. — The National Council of Farmer Cooperatives (NCFC) recently called on Congress to ensure that any economic stimulus package also helps meet the needs of America's farm families and rural communities.

"Revitalizing the U.S. agricultural sector is crucial," emphasized David Graves, president and CEO of NCFC, "especially when you consider that it is our nation's largest single industry, accounting for approximately 16 percent of the gross domestic product (GDP) and nearly one out of every six jobs."

A key component of the eco-

## Pa. Winegrowers Can Compete For California's Market Share

ANDY ANDREWS  
Editor

LANCASTER (Lancaster Co.) — "We have to take on California," said Tim Gorman, president of the Virginia Vineyard Association (VVA). "And the way you do that is with higher-quality wines."

Gorman spoke Wednesday to about 45 grape growers and winemakers at the fall vineyard meeting co-sponsored by Penn State and the Pennsylvania Association of Winegrowers (PAW) at the Farm and Home Center in Lancaster.

The key to success in taking away California's market share, Gorman noted, is to involve more grape growers and winery managers at vineyard meetings, at which both can benefit by sharing good growing methods and focusing on what consumers want.

The VVA, based in Ivy, Va., boasts about 200 members, according to Gorman. Cost of membership is \$40 per year.

Virginia-made wine makes up 5 percent of total state consumption, and about 95 percent of the rest comes from California. Of the 95 percent, about 50 percent includes jug wine and 20 percent is fine table wine — mostly from California.

"We have to increase our market share," said Gorman. For the last decade, Virginia-based wines accounted for only 4 percent of state consumption. But because wine is available in shops and grocery stores, Virginia-based wine sales have increased.

Growers and winemakers can meet for VVA's annual winter conference, a multiday, in-depth technical seminar scheduled Feb. 14-16 at the Omni in Charlottesville. For more information, contact Gorman, in Afton, Va., at (540) 456-8298.

The growers and winemakers also meet at the annual summer "spray off," where sprayer manufacturers demonstrate equipment.

Gorman noted that through education and communication of the nonprofit VVA, "we're more savvy, and our industry is getting bigger," he said. "Politically, we're getting roots."

Mark Chien, Penn State multi-county extension agent, spoke about the successful completion of an extension service-directed survey conducted by an advisory group to PAW.

In the primarily viticultural survey, according to Chien, out of 200 mailed survey packets, 65 responded throughout Pennsylvania. These included grape growers and winemakers.

pending before Congress to give farmers a greater opportunity to improve their income from the marketplace, manage their risk, capitalize on potential market opportunities and compete more effectively in a rapidly changing global economy. Among its provisions, S.312 would:

- Clarify current tax law to allow farmers to cooperatively market value-added products through animal processing (the conversion of feed by chickens into products such as eggs, for example) on the same basis as products derived from mechanical processing (wheat into flour);
- Eliminate the "dividend allocation rule," which unfairly im-

poses an additional or third "tax" on preferred stock dividends paid by farmer cooperative businesses, reduces the amount of earnings that may be returned to its farmer owners, and limits their ability to raise equity capital for modernization and expansion

• Allow the existing 10-cent credit for small ethanol producers to be passed through by a farmer cooperative directly to and for the benefit of its farmer owners; and

• Extend declaratory judgment procedures to ensure that farmer cooperatives have the same rights to judicial review on tax-related issues as any other similar type entity.



Winegrowers met Wednesday at the fall vineyard meeting at the Farm and Home Center. From left, David Hoffman, president of the Pennsylvania Association of Winegrowers; James W. Travis, Penn State professor of plant pathology and extension fruit pathologist; Tim Gorman, president of the Virginia Vineyard Association; and Bill Nelson, vice president, government relations, American Vintners Association. Photo by Andy Andrews, editor

The survey addressed what the primary issues were in the industry. Respondents noted that the big issues were related to vineyard health — disease control, vine decline, and vine health and nutrition.

Those issues are prominent in Pennsylvania because of the often humid, hot climate of the growing season, conducive to the development of fungal diseases and insect pressure.

Chien noted, however, this past growing season will provide "one of the best vintages we've ever had in Pennsylvania," he said, with the substantially dry weather.

The survey will serve as a tool to provide a plan of action. The PAW, in conjunction with Penn State, will try to come up with a strategic plan so that government funding can be secured to develop projects to help the vineyard industry. Those projects include research into better ways to improve vineyard health and to boost marketing of Pennsylvania-grown and marketed wines.

The average number of acres reported on the survey was eight. That's "more than we expected," Chien noted. Pennsylvania wine grape growers range between those who have a few vines to about 60 acres, noted the extension agent.

The meeting, which included one core and one category pesticide credits, will help the PAW and Penn State gather the information needed to develop a

strategic plan. Developing that plan "enhances your abilities and multiplies your effectiveness," noted Bill Nelson, vice president, government relations, of the American Vintners Association (AVA) in Washington, D.C.

Nelson, who spoke at the meeting, said these types of gatherings allow "everyone to get involved," he said, to develop a plan — crucial to getting state and federal project funding.

Nelson said the AVA includes 650 winery members in 44 states. California, he said, comprises about 40 percent of AVA membership.

Grapes are the sixth largest crop in the U.S., Nelson noted, "almost as big as cotton." Pennsylvania is "one of the top 10 states," Nelson said, with a lot of active wineries and growers.

Other states, including North Dakota, now make wine. They had to change statutes dating back to 1933. But wineries are replacing tobacco-growing regions in many parts of the U.S.

Also at the meeting, Eric Miller, chairman of the Penn State extension advisory committee, spoke about developing the strategic plan. James W. Travis, Penn State professor of plant pathology and extension fruit pathologist, also spoke about control of powdery mildew at the meeting.

For more information about PAW, contact them at P.O. Box 400, Kemblesville, PA 19347, or call Mark Chien at (717) 394-6851.

## NCFC Urges Tax Provisions For Farmers Be Part Of Stimulus Package

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