

Unseen Farm Life: Friend And Enemy

VERNON ACHENBACH JR.
Lancaster Farming Staff

LANCASTER (Lancaster Co.) — Microbes on the farm can help or hurt, depending on which kinds they are and where they end up.

Two speakers at the second in a two-part dairy days program offered by Lancaster County extension service addressed on-farm lung hazards and also the use of microbial agents to help cattle digestion and prepare better silage.

Dan McFarland, a multi-county agriculture engineer extension agent, talked about the use of lung hazards to farmers and the use of breathing masks to prevent illnesses or death that can result from breathing certain microscopic forms of life.

Dr. Lmin Kung, with the University of Delaware Department of Animal Science, gave two talks; on feeding certain bacteria and fungus to cows to possibly aid in digestion, and using inoculants to speed the fermentation process in making silage.

According to McFarland, two basic lung problems are identified with farming — Organic Dust Toxicity Syndrome and Farmers Lung.

Causing a flu-like illness several hours after inhalation, ODS is probably more common than believed he said, since it is not fatal and the symptoms are so much like the flu that it can easily be misdiagnosed.

Farmer's lung can cause death and usually affects one person.

The big difference between the two, according to McFarland is what is inhaled and how many people are affected. ODS affects all who are exposed to such conditions.

There is also occupational asthma which occurs in about 10 percent of those working in confinement housing, McFarland said. It is characterized by immediate coughing within 2 to 3 minutes of exposure.

The cause of some of these reactions are mold and fungal spores (basically seeds), animal hair, dandruff, dried fecal matter, grain dust and bacteria in the air which range in size from half a micron to several microns.

The problems are caused by toxins, viruses, bacteria or molds which can be a part of the tiny air particles being breathed in. The particles can cause problems through a number of ways — react on their own, take hold and grow inside the human respiratory tract, or stimulate the body to react in defense — all of which cause symptoms.

McFarland used a PSU extension fact sheet authored by Dennis Murphy, a professor of agricultural engineering.

According to the handout, "Farmer's Lung and Toxic Organic Dust Syndrome (TODS) are names give to two farm occupational diseases caused by inhaling airborne mold spores. Silo Unloaders Syndrome is another name for TODS because the condition often occurs during the unloading or uncapping of silos. Similar diseases associated with other agricultural occupations have been termed Bird Fanciers' Lung, Mushroom Workers' Lung, Wood Pulp Workers' Disease, etc.

"Mold spores are produced by microorganisms which grow in baled hay, stored grain, or silage with a high moisture content (30 percent). They become active when temperatures reach 70 degrees in poorly ventilated areas.

"Farmers most often suffer from these diseases in winter and early spring because the molds have had time to develop in closed storage areas.

"Heavy concentrations of mold spores appear as a dry, white or grey powder in grain or forage. When the feed is moved, billions of these microscopic-sized particles become airborne and attach themselves to dust. These particles pass through the body's natural filtering mechanisms and accumulate in the lungs where they can cause an allergic type of pneumonia. Repeated attacks can lead to scarring of lung tissue which impairs its function. Such tissue damage is permanent."

During the talk, McFarland showed a gas mask performance tester that was built by the college agriculture engineer department and was first displayed during Ag Progress Days at Rock Spring.

The tester consists of a series of mannequin heads hooked up to vacuum tubes. Each mannequin head is outfitted with a different form of respirator.

An air analyzer and valves completes the ability of McFarland to test the amount of dust particles in the air and also to comparatively show the effectiveness of the variety of respirators available.

The most reliable respirator for dust control is the powered air helmet. It consists of a helmet, two filters and an electric fan within the helmet. It has the ability to remove more than 99 percent of the dust in an area. This type of respirator, depending on model and manufacturer, ranges in price from less than \$300 to more than \$800, and in dust removability from 80 percent to more than 99 percent.

About half as effective is the chemical cartridge respirator, not the type used for spraying pesticides, but somewhat similar in appearance. It can handle up to about 60 percent of the dust particles.

The simple masks, called toxic dust masks, remove about 6 to 8 percent of the dust in a room. It is darker in color than a similar looking, simple-construction mask, called a nuisance dust mask.

The nuisance dust mask does not offer any protection against breathing mold spores or toxic dust.

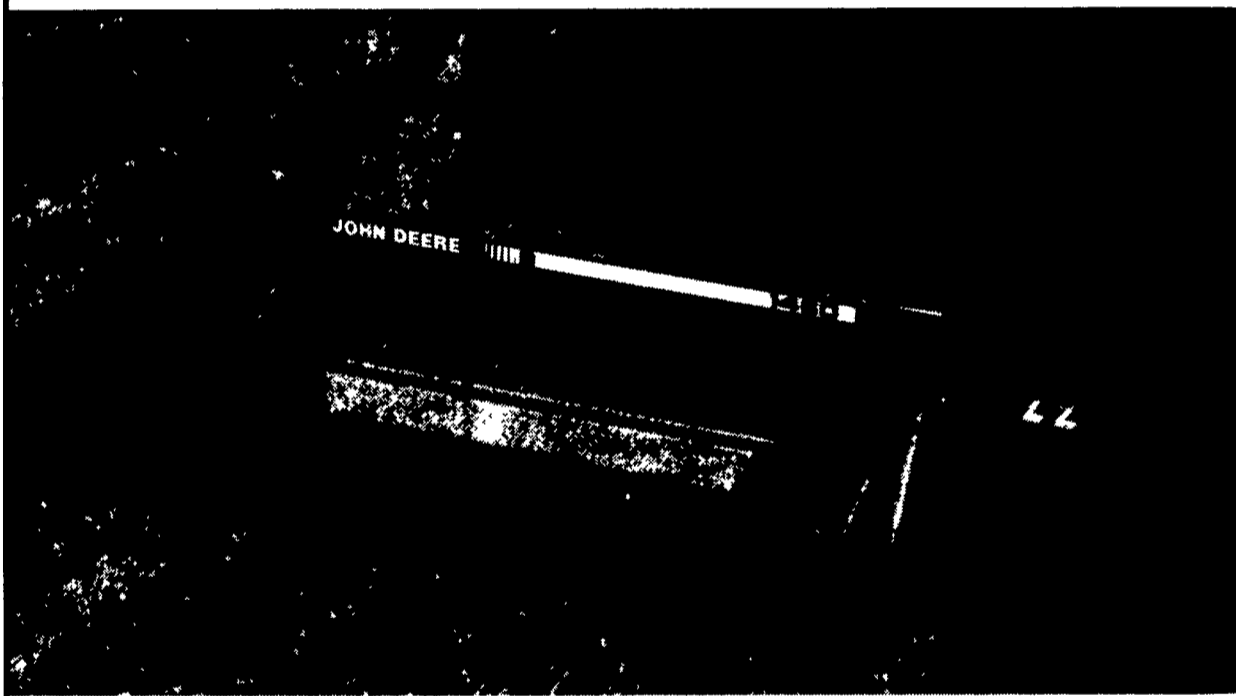
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Dan McFarland, multi-county agriculture engineer extension agent, shows a number of different respirators and discusses their abilities to protect farmers' lungs.

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