

STRAY VOLTAGE(a reply on Dairy-L to: "Does Stray Voltage Cause Mastitis?")

Stray Voltage(SV) does not cause mastitis. Mastitis is, with rare exception, caused by bacteria that get into the udder through the teat canal. Anything that interferes with a cow's ability to milk out can contribute to mastitis. This is mostly true if a mild degree of infection (increased somatic cell count) is already present. If SV is high enough, and it finds a way to shock the cow during milking, it can result in nervousness. Anything that upsets the cow tends to upset the person doing the milking, and either of these can lead to poor milk out. Interestingly, the column of milking a milk hose is a very poor conductor of electricity, and the milking unit during milking is rarely a source for a cow to feel SV.

Not all cows are bothered by a certain amount of SV. Some cows are more sensitive, and others are not sensitive to SV. Some cows that experience SV for a little while will become less bothered by it after time. The effects of SV tends to be greater if a cow cannot avoid it, and if it is not predictable. Mostly cows react to new encounters with SV by being startled. If they experience shocks a few times in a given situation, they may tend to avoid the area, or adapt, and decide that is not worth avoiding.

Many of the behaviors popularly considered as being evidence of SV, such as tail switching, lapping at the water cup, uneasiness or weight shifting in stalls, nose pressing (leaning), are better indicators of things other than SV. This is very important to realize because sometimes farmers can get very frustrated, and spend a lot for time, effort, and money trying to fix things that may seem like they are SV related when they are not.

SV primarily effects behavior, and indirectly may seem to influence a variety of other aspects of a cows health and performance, but it is very difficult to really tell whether or not SV is, or is not, a problem without thorough electrical testing. It is not a perfect world, but ideally the best way to tell what problems SV is causing on a farm is to identify and fix the electrical problems, and see what goes away. Problems that do not decrease shortly after the electrical corrections are made are less likely to be caused by SV, and are more difficult to be certain as to their origin.

SV is just one of many hazards or insults that a cow can encounter. It seems to me that if there are a lot of other stresses (small stalls, lack of bedding, no exercise, inadequate ventilation, nutrition problems, milking system, milking technique, or sanitation problems, etc.) Cows may be more likely to be bothered by a smaller amount of SV than in herds where there are less hazards to contend with. Maximizing cow comfort is a very powerful tool that many farmers can successfully use to reduce the potential for problems with SV. Also, a stall with bedding retainers that allow for 4" of dry bedding, particularly sand, can greatly reduce the chances that SV will chose the cow as a return pathway.

Some very basic defenses against SV are:

- 1) Have it checked for regularly (annually), whether you think you have a problem or not
- 2) Make sure that fences, trainers, and electrified crowd gates are grounded separately, at least 20-35' away from any potential conductor, and that the hot wire is adequately insulated (such as spark plug wire) to contain the very high voltage discharges-normal household wire insulation will leak such voltages.
- 3) Install a SV meter. It won't detect all SV, but will act as an early detection device in many situations.

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