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### FOOTHILL ABORTION UPDATE PART I: THE TICK

Foothill abortion in cattle, also known as Epizootic Bovine Abortion (EBA), is a condition well known to beef producers who have experienced losses due to this disease problem. It is a major source of economic loss for California cow/calf producers and estimates are that 5-10% of the California beef calf crop may be lost each year (45,000 to 90,000 calves per year). While the infectious agent that causes the abortion has yet to be isolated and identified, the most important vector is well known. That vector is the Pajaroello tick (pa-ha-WAY-lo).

The Pajaroello tick (*Ornithodoros coriaceus*) is a soft shelled tick, similar in appearance to the common ear tick of cattle. Pajaroello ticks are found in the soil around trees, in dry brush areas, and around rock outcroppings. These are also the areas that cattle and deer prefer as bedding sites. In fact, it is believed that deer may be the primary hosts and source of food for these ticks. The smallest forms of these ticks are the larval forms (the most immature). These larval forms will attach and feed for about 10-14 days. In this way, migrating deer could carry the larvae to other areas. By contrast, the nymph stage of the Pajaroello tick and the adult form of this tick attach and feed for only 10-20 minutes. These stages (adult and nymphs) are the larger stages and could be seen with the naked eye; however, since they feed for such a short period of time, they are never seen on the cattle. Because they spend such a small amount of time on the cattle, spray products effective against other external parasites are not effective in preventing the Pajaroello tick from feeding on cattle. Also, because these ticks tend to feed in bedding areas and may feed mainly on the posterior areas of cattle (hind legs, lower back), the ear tag insecticides do not seem to be a control method of value either. The Pajaroello ticks consume blood from deer, cattle, man, and other warm blooded animals that rest in these bedding areas. The Pajaroello ticks only need a blood meal every 2-3 months during their active season and some of our captive ticks can survive in the laboratory for three years between blood meals.

The activity of these ticks is dependent on temperature and rainfall. Peak feeding activity is during the hottest, driest months of the year and declines during the colder winter month, when soil temperatures are below 45° F. These ticks are not found in wet areas. The peak feeding periods in Northeastern California at elevations above 4,000 feet are usually in June, July, and August. In warmer areas of the state and at elevations from 500-2,500 feet, peak activity occurs from May to October. In general, the heaviest tick activity starts with the browning of the grass and ends with the first frost. Significant variations to this general trend can occur, such as during our recent drought years when tick activity was observed from February to November in some areas. Certainly, last year's heavy rains seemed to decrease or delay tick activity considerably in some areas. These environmental variations and their effects on tick activity are certainly part of the explanation for differences seen in the occurrence of Foothill abortion in cattle from one year to another.

Currently, we do not know how many (what percentage) of the Pajaroello ticks are infected with the agent that causes EBA. In experiments used to recreate the abortion disease, we commonly use 100 to 200 ticks to feed on a single susceptible, pregnant cow or heifer. Because of the aggressive feeding behavior of these ticks, it is thought that only a fraction of the ticks are actually capable of transmitting the EBA agent that causes abortion. Also, at this time we are not able to determine if a cow or heifer has been bitten by Pajaroello ticks and therefore, possibly been exposed to the EBA agent. Cattle exposed to the ticks, and the EBA agent they carry, develop an immunity that prevents abortion with subsequent exposure. This phenomenon is important in preventing EBA abortions. If cattle can be exposed to the feeding of the Pajaroello tick *before* becoming pregnant, then they seem to be protected from the risk of abortion. Therefore, in circumstances where a rancher knows of areas where ticks abound, it is common practice to place breeding age heifers in those areas to expose them to the ticks prior to breeding. EBA abortions seem to occur about 90 to 120 days after susceptible cattle that are *less than six months pregnant* are exposed to ticks for the first time. Therefore, one of the current control methods is to expose these sexually mature heifers to tick infested areas prior to breeding. In nature, EBA is closely tied to the presence and feeding activity of the Pajaroello tick. If you are concerned that your cattle are at risk of exposure to this tick, your veterinarian, livestock farm advisor, or those of us at the University of California-Davis can give you advice on collecting and identifying this tick. In next month's column the EBA discussion will be continued with the emphasis on the abortion disease as it occurs in the susceptible heifer or cow.

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