

## A CASE FOR CONTROL OF BRUCELLOSIS

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**B**rucellosis is endemic in J&K. The economic losses occurring in the form of loss of the lamb crop (abortions in last trimester especially in first year of the infection), loss of milk production, non-availability/insufficiency of milk for suckling lambs, birth of weak lambs, early lamb mortality and infertility etc. account for the loss of interest in sheep rearing enterprise. The hazard embedded in zoonotic character of the disease imperiling the basic Darwinian instinct of self-preservation and procreation comes no less an insult to injury.

The production and maintenance of elite/superior rams (high breeding value rams) is one, perhaps the most important, among the good many objectives of Govt. Sheep Breeding and Research Farms. These farms are the stations where good quality rams are bred and reared to produce a number of their self-same as far as possible by adhering strictly to the well laid out breeding programs and practices. All pushed by science of today. A synchronic application of the principles of selection, genetics, environmental variation and a good deal of economics goes down to bring up an elite ram.

A good ram of higher breeding value is expected to be free of any (major) disease. In under- developed world, however, this can be dismissed as mere fascination for absurd. The breeding (seed) rams are distributed to the field (every near and far) for breeding and up-gradation of local livestock. The rams are half of the herd. Any genetic infirmity in the rams will eventually show in half of the lamb

crop, but infections especially the contagious and zoonotic will not only potentially expose whole of the herd to hazard both vertically as well as horizontally, but also the human resource engaged with the activity. Diseased; all the good attention paid to the structure, balance and soundness besides the genetic traits fails to account for the health, adaptability, longevity and productivity of the animals. A thorough appraisal of structural conformation, growth potential, depth of the body, width between the legs, symmetry of bones, position of eyes, angle of neck and shoulder, square of limbs, circle of heart girth etc. yield good only in absence of a disease. All the nick names and salt rubbing on the robe to showcase the overflowing love for the meek and affectionate snow white or woolly backfire despite the meticulous attention to every detail related to the animals and the preclusion of disease. What good is a million years' evolution coming in tiny packets of some sexually dimorphic traits explained by Fisherian runaway hypothesis and a lot of aggression portending virility and machismo to pave way for competitive success in sexual selection in presence of a disease caused by an agent that has evolved precariously to choose as its major sites of predilection everything reproductive and anything sexual. In such case, no health is promoted, no life is prolonged and no trait is preserved. Any laxity in screening of seed ram can result in broadcasting of infection into the

peripheral livestock making the bulk of population infected as a consequence. The active breeding/serving period of a ram often goes to more than 6 years in the field. The rams cannot be allowed to become a perpetual source of infection. Diseased, the elite ram that was supposed to shoot up the gains of a farmer beyond the break-even point exhaustively serves to break the back of farmer evenly. The silent estrus in young hoggets makes the ram spent more time with them. This increases the risk of infection to the virgin stock and therefore the abortions in primiparous animals. To complicate the matter, the Kids and lambs born to such females may pass *B. melitensis* in their feces when they suckle, become persistent carriers and remain undetectable by diagnostic tests, including serology, until they give birth or abort.

As a haven of animals bred and fed on scientific lines, the farm animals are deemed to represent the pinnacle of sheep breeding endeavors. The farms are not only an instrument of demonstrative education for the interest groups such as the farmers, breeders, entrepreneurs, industrialists, unemployed youth etc., but also an institution leading by example in all respects involving adherence to the standard operating procedures and good manufacturing practices. Ban on cow slaughter (religious taboo) in Punjab & Haryana accounts for importation of infected animals to the state of J&K. The mixing of infection free animals with the infected ones in the highland pastures results in ready transmission and subsequent creation of new shedders and epidemiological niches. The lack of education reflecting in retention of the *Brucella* infected livestock on the assumption of non-correlation of positive test result with the abortion in ewes, not knowing that the abortion occurs only on first pregnancy of infection is another factor for the rise or maintenance of the disease.

The ram to ewe ratio for optimal breeding performance can go up to 1:40 or even 1:80. In capacity of index host, an infected ram can infect at least 80 females in a go. the infected females can shed the organism in the vaginal discharges for as long as 2-3 months. The organism shed in the environment can enter the udder via patent teats.

The farms particular about various farming operations (dosing/vaccination/shearing) run a risk of iatrogenic spread. The farm environment is usually a closed space. And, the time for which the animals are in contact with one another is higher compared to the animals reared in open spaces.

Depending on temperature, humidity, exposure to sunlight and the presence of organic matter, the survival period for the organism reportedly ranges from less than a day to more than 8 months.

Modern baton flooring can seem promising in minimizing the dust and soil and thereby reducing the chances of survival of the organism. Survival is longer when the temperature is low. In conditions of high humidity, low temperatures and no sunlight, these organisms may remain viable for several months in water, aborted fetuses, manure, wool, hay and other materials. Sheep and goats may remain infected for years. They can shed *B. melitensis* whether they abort or carry the pregnancy to term, and reinvasion of the uterus can occur during subsequent pregnancies.

To vouch for the breeding soundness of rams, the infertility and arthritis are to be ruled out, and as a matter of fact the two syndromes are mostly attributed to Brucellosis. The epididimitis (*Brucella ovis*) and arthritis can both lead to reduced tupping and low conception rates, and therefore the loss of lamb crop.

The clinical signs are not pathognomonic and unequivocal diagnosis of *Brucella* infections can be made only by the isolation and identification of *Brucella*, but in situations where bacteriological examination is not practicable, diagnosis must be based on molecular or immunological methods. RBPT and  $\bar{e}$ ELISA are suitable for screening of flocks and individual small ruminants. For the control of brucellosis at the national or local level, BBATs (the rose bengal test [RBT] and the buffered plate agglutination test [BPAT]) and ELISA are considered as suitable screening tests. All cases of abortion as well as orchitis in sheep and goats should be considered as suspected brucellosis and should be investigated through the herd/flock history and submission of specimens for laboratory testing. All laboratory manipulations with live cultures or potentially infected/contaminated material must be performed at an appropriate biosafety and containment level determined by biorisk analysis. In infected herds/flocks, a positive result to any serological test may be considered as confirmation of a clinical case. Any reactor in any serological test should be considered to be infected even in the absence of clinical signs.

Placing test and cull strategy at the root of control and containment policy is a good option to go with except that the farm animals sharing migratory routes with the non-farm livestock at the best, at the worst all out sharing of highland pastures between the farm and local livestock occurring in certain farms at any rate sets an impediment and makes the control policy rather difficult. Although there is no state *Brucella* policy to deal with this menace, yet in absence of any policy directed either at elimination/eradication or control of the disease, a prerogative to reduce or at least to contain the disease at its present level can be set and thought out forthwith.

