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Vector-borne Diseases (VBDs) in the Changing Environment

Vector-borne diseases have been the scourge of animal and man since the beginning of time. Malaria was the first vector borne disease which probably lead to the demise of Alexander, the Great in 323 BC. With the advent of 20th century, vector-borne diseases (VBDs) were categorized amongst the most serious human and animal health problems in the world. Vectors are organisms that transmit protozoan, viral, bacterial or helminth pathogens from an infected host (human or animal) to another. Vectors have been classified as biological or mechanical depending on phase of lifecycle of the disease agent occuring in the vectors. The most common disease vectors are arthropods-flies, mosquitoes, ticks, fleas and lice. These blood sucking arachnids and their pathogens exert a major impact on the health and welfare of livestock and economics of animal husbandry, resulting in loss of billions annually. These Vector-borne infectious diseases are emerging or resurging confounded by new pathogens, demographic, climatic and societal changes, global travel, insecticide and drug resistance, lack of disease surveillance data and genetic changes in pathogens.

The two most important groups of arthropod vectors are ticks and mosquitoes. In general, mosquitoes are relatively more influential as vectors of the pathogens resulting in malaria, chikangunya and dengue in humans. Ticks are particularly important as vectors of pathogens affecting domestic animals, causing diseases such as babesiosis, anaplasmosis, theileriosis, cowdriosis, ehrlichiosis, hepatozoonosis, cytauzoonosis, borreliosis, tularaemia and rocky mountain spotted fever. In addition to ticks, tsetse fly transmits trypanosomiasis significantly affects in large ruminants; fleas act as vectors for yersiniosis, bartonellosis, haemoplasma and rickettsial infections in dogs and cats; flies causes thelaziasis, parafilaria infestation, onchocercosis and habronemiosis; sandflies spread leishmaniosis and mosquitoes transmit filariasis in livestock and dogs. These arthropod vectors also assist in transmission of viral infections *viz.* blue tongue and Schmallenberg by culicoides midges and tick transmitted encephalitis, louping ill, Crimean congo hemorrhagic fever (CCHF), African swine fever (ASF), African horse sickness (AHS), Rift valley fever (RVF) and Vesicular stomatitis.

Chemical control, treatment of animals, chemoprophylaxis and immune-prophylaxis are amongst the measures available to limit the losses incurred by VBDs and vector control. Meanwhile there is requisite to work on the farm hygiene and measures for disposal of farm waste and animal dung to minimise the breeding ground for these vectors. On the national front, considering the geography, climate and endemicity of VBDs in farm animals in India efforts should be in place for an effective 'National Vector Borne Disease control programme' for the livestock population in the country.

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