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Ticks in Cattle: Their Importance and Chemical and Treatment Control

Waqar Ahmad Khan[1], Dr. Shahid Ali Shah[2]
[1]Department of Chemistry Sarhad University of Science & Information Technology, Peshawar, Khyber Pakhtunkhwa-Pakistan. Email: waqarahmadkhan1990@gmail.com
[2]Department of Biochemistry Botany Zoology University of Haripur, Khyber Pakhtunkhwa-Pakistan. Email: alishahshahid@yahoo.com

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ABSTRACT

Ticks transfer diseases to animals and humans. Ticks create major financial losses to livestock and have a variation of adverse special effects on cattle hosts. Tick working as possible vectors for helminth parasites and haemoprotozoa cause blood loss directly. Large numbers of tick's drinking red blood induce anaemia and decreased living weight in cattle animals, even though their bites can damage the skins. Ticks, are answerable for important financial losses due to their potential to transmit rickettsial, viral infections and protozoan to cattles. Here are a variety of ticks-control tactics available, but then again each has its own set of problems. The importance of ticks and their control are the topic of this review. Ticks have controlled by the help of vaccine and spray or chemicals compounds etc.

Keywords: Tick resistance, Control tick, Cattle, Ectoparasites, Fever tick.

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INTRODUCTION

Parasitic infections are a worldwide issue that pose a significant threat to animal health and productivity. These can be caused by endoparasites that dwell inside the body or ectoparasites that assault the skin, such as ticks, flies, midge's fleas, and mites. Tick's are a type of ectoparasite that feeds on, reptiles, birds the blood of mammals, all over the creation [1]. Tick's have been predictable as medically and economically important because of their capacity to transfer diseases to humans and animals. Ticks are members of the Arthropoda phylum and make up the major group of organisms in the Acarina order. bodied ticks soft (Argasidae) and bodied ticks hard (Argasidae) are the two types of ticks (Ixodidae). Ticks Hard feed on their hosts for elongated eras of time, ranging from more than a few weeks to days , dependent on lifetime period, host type, and tick class. Furthermore, many ticks soft have an amazing tolerance to famine, and can go for ages without a Red blood meal [1]. Soft ticks' increases, but not enough to support the massive capacity of blood they consume, which can be anywhere from Five to Ten eras their un-fed body weight[2] Tick create important financial losses to cattle around the world and have

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a variety of negative effects on livestock hosts.Ticks that parasitize vertebrates include the Nuttalliellidae (one species) Ixodidae seven hundred thirteen species, Argasidae one hundred eight five species, families. Tick's are common ectoparasites of cattle in tropical and subtropical regions, and they reason significant financial losses. In many poor countries, tick disease protozoan infections Babesiosis) Theileriosis such as cowdriosis, rickettsial diseases, tick related dermatophilosis and Anaplasmosis are serious healthiness and managing issues for cattle. The genera Hyalomma, Amblyomma,Rhipicephalus, and Boophilus are the most economically significant ixodid ticks in tropical areas [3]. Tick control can be done in a variety of methods, but each method has its own drawbacks. Chemical management with acaricides was once thought to be one of the utmost effective treatments, however it was discovered that tick's have acquired resistance to a variety of acaricides [4].

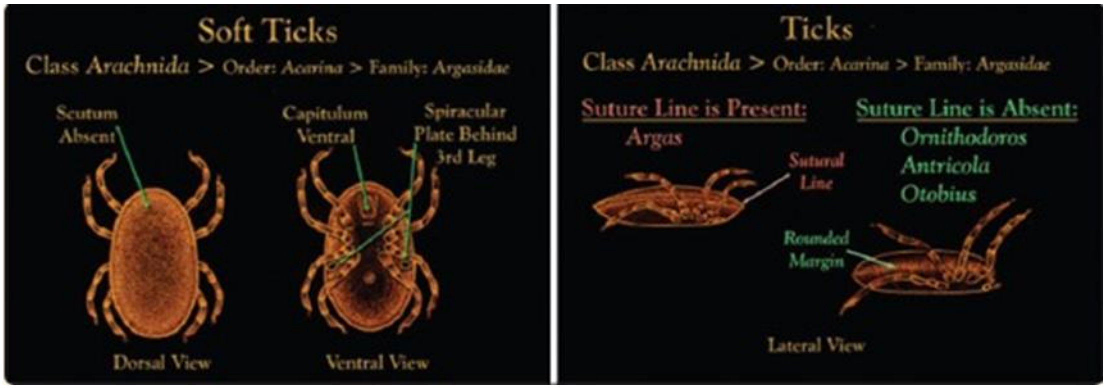

Figure:1 Soft Tick and Hard Tick

Figure:2 *Argas miniatus*.

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Figure:3 ***Ornithodoros rostratus***

Figure:4 ***Otobius megnini***

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Figure:5Antricola guglielmonei

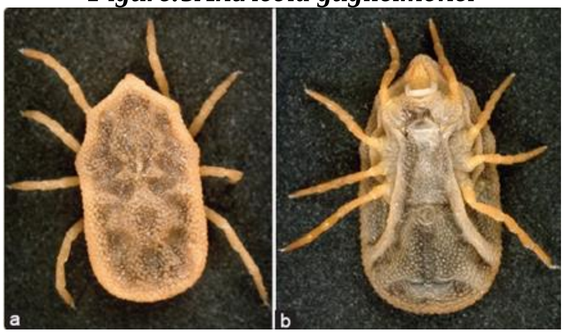

Figure:6 (a&b) Carios kelleyi

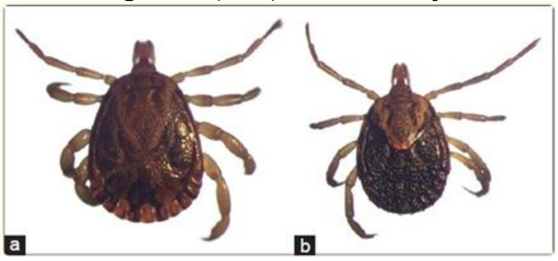

Figure:7 (a&b) Amblyomma cajennense sensu

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Figure:8 (a&b) Rhipicephalus (Boophilus) microplus

Figure:9 (a&b) Rhipicephalus sanguineus sensu lato

Figure:10 Dermacentor variabilis

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Figure:11 Ixodes pacificus

Figure:12 Ixodes scapularis

Tick ecology

[5] The physiological age Rhipicephalus appendiculatus was investigated. For epidemiological research, the stage structure of a populace of disease pathogen vectors is quite useful. It's been around for a long time for vectors insect, wherever the success of an era-dication operation may be measured by reduced survival. Because of the basically distinct link among feeding and spread chances of insects and ticks, age grouping of tick requires theoretic adaptation. Seasonal

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dynamics have a significant impact on the dynamics of tick-borne disease transmission, according to [6].

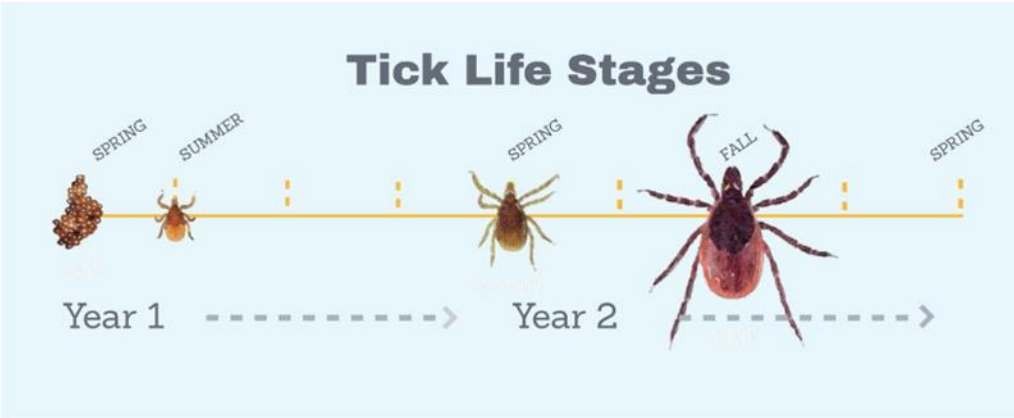

Figure:2 Tick Ecology

DAMAGES CAUSED BY TICKS AND HOW TO PREVENT THEM

[7] Ticks are a problem of veterinary because they spread infections, cause toxicosis and damage livestock physically. Ticks are distributed into 3 sets: Argasidae (ticks soft), Ixodidae (hard ticks), and Nuttalliellidae (ticks native). Ticks are vital to man and his livestock, and they must be managed if cattle output is to fulfil global protein demands. Knowledge about the tick's nature and behaviour, as well as the diseases it transmits, aids in control.

Control and Losses

[8]. A slew of problems regarding ticks and vector-borne infections in livestock sparked a desire for tick management and cow loss reduction strategies. In subtropical zones and tropical of the world, controlling tick infestation's and the spread of borne tick disease remains a trial for the livestock sector. Ticks controller is a top priority for various tropical and sub-tropical countries. Tick infestations can cause significant financial losses. In 1974, cow tick (Boophilus microplus) losses in Australia were projected to reach sixty-two million USD [9]. Every year, loses Brazil roughly Two billion USD [10]. Effective tick control strategies can significantly reduce such losses. Diseases transfer, tick toxicosis, or paralysis and ticks -produced bodily injury are the three main reasons for tick control in domestic animals. Chemical acaricides are now the most effective means of tick management [11]. Ticks cause important financial losses both directly and indirectly by sucking blood by transmitting infections and poisons.

Direct effect

tick bites induce a drop in live weight and anaemia in domestic animals, as well as a reduction in the quality of their hides. Ticks can cause s skin, to irritation or anaemia in cases of large infest-ations [12,13] found that these parasites have direct effects on production milk and weight gain in livestock.

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Figure:5 Tick effect the Cow

Domestic cattle Body damage

[11]. Tick cling to the body seeking a blood meal and can irritate cattle and cause bodily damage. "Tick worry," irritation, discontent, and loss weight owing to a tick infest-ations; direct damage to skins from bites tick; and losses blood due to tick suckling.2. Pathogen carrier Ticks can transfer pathogens that they transmit from host to host whereas sucking blood, causing a wide range of disorders [12]. Tick-borne disease usually damages the bloodstream and lymphatic system [13]. In Australia, the United States, China, and other nations, tick fever organisms such as Anaplasma marginale are a major cause of cow illnes.

Tick control with chemicals

tick-borne and Ticks diseases are controlled using a of techniques. acaricides Chemical are now the most effective means of tick management. Acaricide's used to manage tick on cattle or that the ticks are killed while causing no damage to cattle [11]. Regassa has also documented the effectiveness of certain herbal mixes for tick control at 70%. (2000).

Acaricides

[14] Tick infestation can be controlled with the used of acaricides, which is one of the strategies for reducing tick-borne infections. Ticks on livestock are controlled with a variety of acaricides, including carbamates, organophosphates, synthetic pyrethroids, arsenical, and chlorinated hydrocarbons.

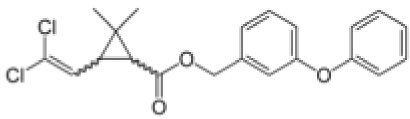

Figure:8 Chemical Structure of Acaricide

Arsenic

Arsenic was the earliest and most successful approach for ticks controlling and diseases tick, and it was use in various parts of the world before resistance developed [15]. It was first employed for tick management in South Africa in 1893 [16], and it's cheap, stable, and water soluble, with a reliable test vat-side [11]. Arsenic, the cheapest and most effective acaricide, was the first to be widely utilized. Sodium arsenite and other water-soluble compounds are the most common forms. 3. Hydrocarbons chlorinated Synthetic acaricides are what these are.

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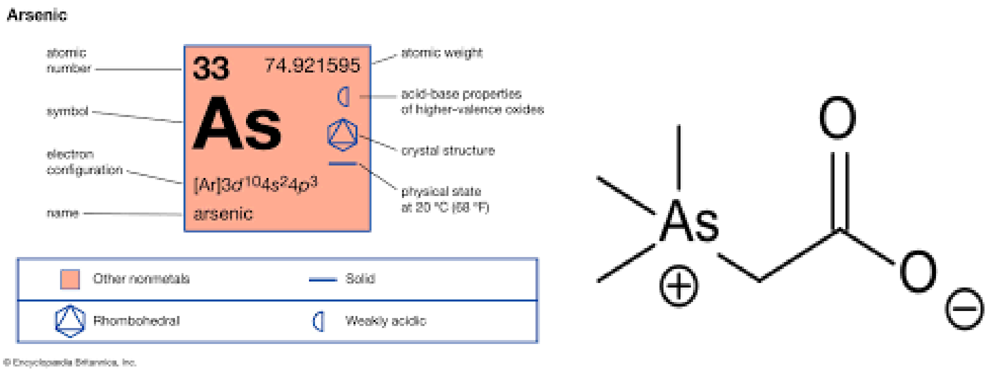

Figure:9 Arsenic Chemical Formula

Hydrocarbon Chlorinated

[11] Acaricides are long-lasting and have been used extensively to control ticks all over the world. Toxaophene benzene hexachloride is of particular interest.

[17] Their method of action is to disrupt tick nerve transmission. These chemicals have generally been withdrawn from the marketplace due to their high poisonousness and lengthy lifetime [18].

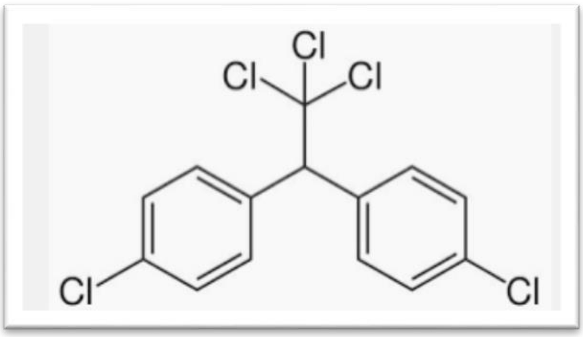

Figure:10 Chemical Formula of Hydrocarbon chlorinated

Compounds of Organophosphorous

These are phosphoric acid esters that have a wide spectrum of anti-tick effects in companion and livestock animals at very low concentrations. On the other hand, unlike chlorinated hydrocarbons, danger of severe poisoning in animals is higher [11]. Organophosphorous acaricide resistance ticks in was initial identified in 1963, and other species tick are now known to be tick resistant [19].

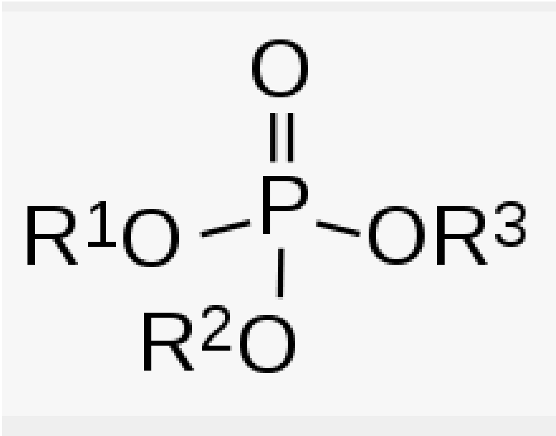

Figure:11 Chemical Formula Organophosphorous compounds

Carbamates

These are carbamic acid esters that look a lot like organophosphates [18]. They are slightly more harmful to mammals than organophosphates and substantially more expensive.

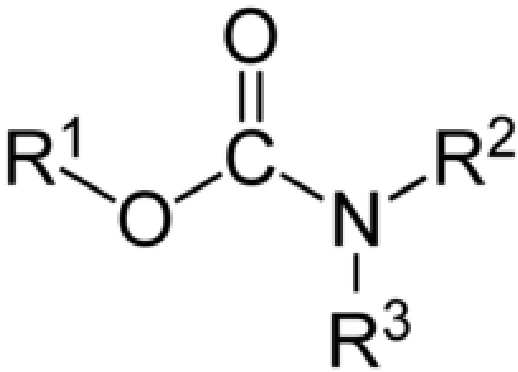

Figure:12 Chemical formula of Carbamates

Application of chemicals

Chemicals have been applied to animals using a variety of procedures, containing ear tagging, dipping, spraying, and pour on. The most common way of tick control on cattle is to apply acaricides directly to the animals [11].

Dipping

Animals are dipped in a dipping tub with a chemical solution in this procedure. The use of "dipping-vats" to dip infested tick livestock in a various of agent's was a chemical part of the struggle to manage ticks and tick diseases disturbing livestock in United States Australia, Africa and the by 1893 [20,21]. Hundreds of probable acaricides were investigated for dipping, containing crude petroleum, fish oil,, kerosene, creosote cottonseed oil, soap, tobacco extract, and a combination of kerosene and Sulphur [20]. Infested livestock should be bathed with coumaphos (0.3 percent active component), an organophosphate acaricide [24]. Using dipping vats to treat animals with acaricides for tick management is a highly effective practice in general. Vats, on the other hand, may be unfeasible for many small ranching enterprises because to their immobility, expensive initial building costs, and the cost of acaricides. Test dipping vats must dip the livestock [11].

Spray on domestic livestock

[24] acaricides fluid applied to an animal via a spray have numerous benefits and have been effectively used to control tick on the majority of animals. Spraying, on the other hand, is often less effective in monitoring ticks than dipping in a dipping vat due to issues with completely administering the acaricides to all portions of the domestic livestock body [11].

Figure:15 Spray on Tick

Spot treatment

In cattle with enormous udders, the internal regions of the ear, the tail brush, and the areas among the legs and the teats are most prone to escaping treatment. Hand dressing [24] spot treatment are terms for applying acaricides to these locations by hand. Application of insecticides by hand to limited body sections with aerosols, oils, smears, and dusts is time-consuming and labor-intensive, but some cases it may be effective more and cost-efficient (in terms of acaricide cost) than treating the entire animal [11]. 4. Additional applications Ear tags, neck bands, tail bands, and pour-one are some other acaricide application methods, especially for pyrethroids with extended residual action. In addition, a mechanical applicator was created.An intraruminal ivermectin slow-release device offered 90 days of tick protection in Kenya [25]. Tick repellents for animals are limited [26,27]. According to US officials These acaricides can be hazardous to cattle and people, leave residues in animal tissues, and cause environmental damage if they are not used and managed properly, according to the United States Department of Agriculture (1967). The safe application of Chemical acaricides is critical to a successful tick control programme. It is vital to examine and implement safe use, safeguards, and procedures on a regular basis to avoid accidents and misuse [11].

RESISTANCE

Tick resistance to acaricides is becoming more common, posing a serious economic threat to livestock and related businesses. The majority of stockholders rely wholly on acaricides to ticks control, but they lack access to guidance on how to benefit from their control tick programme or how to detect and resolution acaricide resistance issues [28]. Unless control tactics are adjusted, such resistance in these ticks should be predicted after five to ten years following the overview of any new type of acaricide [29]. Tick resistance to acaricides has evolved through time, necessitating the development of new products [15]. looked into the serological evidence of tick fever exposure in young calves on dairy Queensland farmhouses. They came to the conclusion that immunization is the most effective way to prevent cattle from fever tick in tick-infested areas.

Host resistance

[30] Individuals and cow breeds differ in their resistance to tick infection. It is well known that indigenous double purpose breeds are very resistant to ticks in many subtropical and semi-arid conditions in Africa, leading in low infestation rates and large direct losse's.
disease Tick-borne enzootic stability and host resistance to ticks are well-known occurrences [31,32].

ALTERNATIVE TICK CONTROL METHODS

Because of the current drawbacks of chemical acaricides, adopting alternate ways could help to alleviate these issues. [29] It is heritable, and resistance tick can be selected and bred not only in European zebu breeds, but also within European breeds. Currently, selection for resistance or culling for susceptibility must be based on tick counts surviving on cattle exposed to tick challenge, either naturally or artificially. This creates apparent issues for livestock producers who are concerned about ticks' impact on output. Tick management methods include resistance tick livestock pasture burning breeding, pasture spelling, and the use of specific grasses. [33] the most reasonable means of reducing tick depredations would be to take advantage of natural host-parasite relationships. Despite Theileria ,Babesia and their vectors Rhipicephalus and Boophilus cattle thrived throughout Asia and Africa. The ability of an animal to inhibit the maturation of huge numbers of ticks, as well as immunity disease, are both survival mechanisms for the host as well as exterior and interior parasites. The issue is not just how to use these qualities, but also how to boost production. B. microplus resistance is mostly found in zebu (Bos indicus) cattle. Tick-resistant Bos indicusBos taurus meat and dairy cattle have made significant progress, limiting the impact of ticks while maintaining high output [34,35]. Cattle would acquire a higher resistance to tick infection if pasture nutrient value was improved [36]. Insect management based on sterile males or genetic alterations, according to [37] offers little promise, although pheromone attractants could be effective for home pets or ticks attached to particular places. Farmers also employed alternate measures such as engine oil (12%), chickens (4%), Jeyes fluid (24%), and de-ticking, according to [38] (2 percent They also come to the conclusion that mycopesticides are less harmful to the environment than traditional acaricides.

Immuno-logical control

Through vaccinations to actively immunize cattle against the cattle tick, several ways have been used. The utilization of complicated tick extracts was used in the earliest attempts [39]. That program's main focus was on vaccine development, manufacture, and distribution. The Muguga cocktail, a three-strain Theileria parva stabilize vaccination, was created. The infection-and-treatment strategy has utilized this vaccine in conjunction with an antibiotic therapy. He cautions that there is still a long way to go before anti-tick vaccinations reach their full potential, and that they will almost certainly require different antigen formulations. The Bm86

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vaccination against the cow tick Boophilus microplus has been shown to be effective in a variety of studies, particularly when used in conjunction with acaricides [40,41]. Two vaccinations have been produced against the tick Boophilus microplus. In partnership with the FAO, they are being field tested in Brazil. Although a vaccine is available, its effectiveness is not 100 percent, necessitating the development of a better and more complete vaccination to aid in the treatment of tick-infested livestock [12]. "Advances and prospects for subunit vaccinations against protozoa of veterinary interest," according to [42]. Other elements that influence the formation of a protective immunological response include delivery, adjutant, animal age, and so on. The identification of protective tick antigens remains a serious scientific issue as well as a fundamental restriction in the development of new anti-tick vaccinations. Isolated the Bm95 gene from B. microplus strain A and discovered that Bm95 antigen from strain A could protect against Bm86-sensitive and Bm86-resistant tick strain infestations. He proposed that Bm95 be used as a more universal antigen to protect cattle from B. microplus strains from various geographical locations [43].

Objective

1. To Investigate the tick, suck the blood from the animal and loose of weight
2. To Investigate the tick damage, the skin of animals
3. To study the tick decreased the milk production
4. To search the tick can control by the help of chemicals.

LITERATURE REVIEW

[44] Nejash *et al.*, 2016 reported that acaricide, also by hand dressing or hand spraying is the traditional way of controlling tick infestations in Ethiopia. To reduce the negative effects of ticks, effective and timely strategic control measures are essential.
[28] suggested for tick control on cattle are in line with those for minimizing the pace of acaricide resistance selection. There is a need to educate cattle producers about tick control and resistance mitigation techniques.
[45] investigated ticks can damage the health of these animals in both direct and indirect ways, resulting in considerable losses in the production of milk meat, eggs and leathers in some circumstances, expiry.
[46] studied there is no effect against other tick species such as Amblyomma spp., according to research with Bm86-based vaccinations. The impact of ticks and tick-borne diseases, the challenge of chemical control due to acaricide resistance, and the development of anti-tick vaccination research efforts in Mexico are all discussed.
[47] Studied that vaccines based on the Bm86 tick antigen were used in the first commercially available tick vaccines cattle, and they exhibited decent consequences in reducing tick numbers, affecting female tick weight and reproductive performance, resulting in a reduction of cattle tick populations over time and, as a result, a lower reduction of the pathogen agents they carry.

Result and Discussion

Ticks transmit diseases to humans and animals. Ticks economic losses to cattle and have a variety of adverse effects on livestock hosts. Ticks functioning as possible vectors for haemoprotozoa and parasites helminth cause loss blood directly. ticks blood sucking induce anaemia and reduced weight live in home animals, but their bites can harm the skins and the creation of the milk is reduced. Resistant tick cattle for all production methods, necessitating the establishment of absolute control by an effective vaccine.

[48] Examined the link between hard tick infestation and milk output and udder health in dairy goats that have been extensively reared. Controlling tick infestations in widely grown dairy goat herds is critical for improving health and welfare.

[8] suggested for tick control on cattle are in line with those for minimizing the pace of acaricide resistance selection. There is a need to educate cattle producers about tick control and resistance mitigation techniques.

[49] investigated that chemicals play a significant role in tick control on cattle. organophosphates, formamidines, organochlorines, carbamates, synthetic pyrethroids, Plant extracts and macrocyclic lactones are considered by their origin or chemical structure. A variation of in vivo and in vitro test methods have been used to demonstrate their efficacy. Other issues, such as the chemical's toxicity, productivity losses from managing the animals, and the chemical's direct cost, can offset the benefits of chemical control of the adverse effects of ticks.

[51] studied that tick-borne skin and hide damage has gotten little attention. The grain (outside) surface skin/hides determine the quality of leather. Tick bites, inflammatory responses, and subsequent bacterial infections that typically develop at feeding sites cause harm to the outer surface. To reduce infestation-related losses in Pakistan's leather sector, tick control should be considered.

[52] Rajput *et al.*, 2006 one of the information collected tick sucking blood induce anemia and reduced live weight in home animals, whereas their bites can damage the skins.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Ticks, more than any other species of arthropods, financial losses to livestock around the world, have a variety of adverse effects on cattle hosts, parasitize a extensive range of hosts vertebrate, and transfer a greater variety of pathogenic pathogens. Much has been accomplished in the domain of tick control, but much more has to be done. The vaccine supply is extremely limited. The capacity to elicit an effective, long-lasting immune response is critical, but it can be improved. The existing situation is unsatisfactory due to resistance acaricide, chemical residues in food and the environment, and the un-suitability of resistant tick livestock for all production methods, necessitating the establishment of absolute control by an effective vaccine.

Recommendation

Tick is a parasite that can be transferred animals to animals and humans. Especially tick effects different animals and bodies. Tick should be controlled by the help of vaccine and chemical that vaccine and chemical eliminated the whole ticks from the animal's body or skin. Furthermore, ahead study the researcher required to be spray on ticks but the various of ticks are lived in animals since the tick damage the weight of the animals, and damage of the skin of the animals and decreased of the milk production.so therefore the researcher should to be required to spray on animals and whole tick has finished.

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