Introduction
The cows are well known and domesticated from VEDIC ERA and worshiped as the holy GANGA river and other goddesses by the Hindus and people of other societies in India. Our PURANS have established the importance of cows as the ‘GAUMATA’ this means that these are the JEEVAN DAYINI SHAKTI for the human beings. It is absolutely true that not only the cow milk and GHEE/ But their excretory products eg. urine and cow dung are also widely used as medicines and different therapeutic cases in the treatment of a number of simple as well as uncurable diseases.

Shushrut, Dhanvantari, Charak and so many other ancient RISHIES have proved that, the use of GHEE in the HAVAN processes in our country is not only the religious but purely a scientific phenomenon to keep and maintain hygiene of our surroundings. In the recent time GAU-MUTRA is widely used as an excellent medicine in the modern systems of medical sciences like naturopathy and hakimi chikitsa in the same way as recommended earlier by Vedic literature.
Like the other areas of our socio-economic life, the old thinking about livestock has also been changed. According to the modern opinions, the livestock are not only the assemblage of pat animals in our vicinity but these are one of the important resources of the life supporting materials and economic landmarks. Nowadays a criterion has been originated in the people of cities and also the villages that like the other agricultural trades and small level cottage industries, the livestock may also be used in different ways. Doubtlessly, this opinion will be very useful in improvement of our economy and the scientific researches and application of several techniques have made it possible.

In the developed and high tech countries of the world like USA, Britain, Canada, Denmark, Argentina, Italy, Germany, Japan, Russia and Australia; the livestock specially cows, sheep and horses etc. are used as the locomotive living machinery for the production of enormous amount of milk, meat, leather, fur, carcasses, bone powders and other byproducts.

India, by luck is the only country in the world, which has naturally the richest and most diversified genepool of livestock and wild life flora and fauna. The issues of globalization have
enhanced the villagers, people of the urban sectors and also the gene pool of our livestock's just like the intellectual properties of our country. The research centers in the different parts of India are continuously providing the advance knowledge about the commercial value of livestock's and goats etc. Chickens also contribute a satisfactory job in this field.

In India, buffaloes have proved their worth and have been accepted as the most commercial animal among the cattle. But, the cows have their own importance as the divine presentation on the earth humanity.

In the present investigation, the different cow-breeds of Indian origin reared and domesticated in the Rohailkhand area are selected and studied widely. Before starting the detail observations of selected cow-breeds, it is necessary to focus the view on some general aspects and records about them, which have been collected from different available sources such as recent magazines of agriculture, animal husbandry and annual reports etc.

The cow belongs to the phylum-Chordata, class-Mammalia (milk-giving) Order-Artiodactyla (even-toed hooved), Sub order-Ruminata (cud-chewing), Family-Bovidae (hollow-horned), Genus-
Bos (ruminant quadrupeds). Species is Bos indicus (humped cattle), Asdell (1946). These are intelligent, graceful and frugal animals, which have proved useful to men through ages. They provide a potential source of animal protein for human consumption besides providing skin for his varied use in addition they form an integral part of our economy.

India is the largest cow owning country in the world, both in respect of their numbers and varieties while China ranks second in position. Among the other countries of world, Bangladesh, Australia, Argentina and Pakistan are the most popular for cows. This was probably to have been domesticated and brought into symbiotic relationship with man. According to 1988 FAO statisticated on livestock population, India possess 201.5 million cattle and 20.8 million buffaloes comprising 15.9% of the world’s cattle population and 23% of the total bovine population. In India, maximum number of buffaloes and bovines are found in U.P., partially in Western U. P. parts, and the country contains more than 35.0% buffaloes population in the world. Thus India can feel proud of having not only the largest number of cattle and buffaloes in comparison to any country belonging to this planet, but also due to having world’s best breeds of dairy buffaloes found
in 7 breeds. They are noted for their adaptability to tropical heat and resistance to most tropical disease. Our major handicaps, out of 201.5 million cattle, only about 18% are distributed among 27 well-defined Indian cattle breeds. Rest 82% are categorised as "Non-descript" or the "local deshi cows" characterised by their poor growth rate, late maturity and low milk and beef production.

Cows are the main bases of agriculture in our country. According to Royal Commission on Agriculture (1926) cows provide milk for the farmers, beside it, these also provide oxes for the use of agriculture. The Common Wealth Bureau and Animal Breeding and Genetics have reported that cow milk is nearly the resemblance to human milk and has medicinal properties against several ailments and disorders. These have the widest ecological distribution and do from extremely cold to very hot humid, damp and even most desiccating environmental conditions. Their dung is good fertilizer and fuel in villages and we use them in the "gobargas". Cows, in India therefore, have a bright future and need to be developed judiciously. In corporation of science and technology for important breeds of cows the government has been established many farms and institutions.
Livestock industry in most of the developing countries are established as a small industry with major share of produce, contributed by small subsistence farms. The animals are mostly seen scavenging on roadsides, fallow lands or slums, where management systems coupled with scattered small units, possesses a great problem.

The dead bodies of animal also constitute an important source of national wealth. India is an important supplier of thick skin to the international market. Horns, hooves and bones are utilized in the medical and cosmetic industries.

Bone meal is used as mineral supplement with the food of cattle and also as fertilizers. Several important developments have taken place since 1962 in the field of animal husbandry. Intensive cattle breeding programmes have lead to the development of high milch yielding animals. Under this programme, a large number of exotic cattle have been imported but these animals are highly susceptible to a number of tropical diseases transmitted by ectoparasites. The “Cow”, doubtlessly, has the greatest range of ecological adaptation. Their geographical distribution ranges from the extreme tropical rain forest to the driest deserts and from the coldest uplands to the hottest plains where other animals could.
not survive (Epstein, 1965). Certain definite physiological characteristics are also responsible for its better adaptability, which helps in the integration of socio-economic situations resulting into high economic viability. The annual growth rate of cows in India since 1950 is very high in comparison to species of other livestock. Presently, cow is considered a highly desirable species for research all over the world on account of their highly economic milk production, management, physiology, reproduction, health and production technology. The impact of this knowledge is becoming very useful for economic development for the farmers of the country. Lately, commercial cow forming is coming up in different parts of the country. Mostly, large amount of milk production are expected to venture to take up dairy industry in the near future. This will further improve export potential of live cows their skin and milk products.

The domestication of Zebu cattle appears to have been taken place in Afghanistan. Today also some Zebu breeds may be located in Iraq. For introducing some vital characteristics of Zebu cattle, viz. particularly higher disease resisting power, and heat tolerating capacity, these have been imported from India to Southern U.S., South America and Australia for developing
tropically adapted dairy/beef cattle breeds. Similarly, for last
decade attempts have been made to introduce superior exotic
inheritance of *Bos indicus* through crossbreeding. A few superior
breeds/strains from such crossbred base have been evolved in the
cattle breeds. Their productivity performance is superior even to
those of our indigenous pure dairy breeds. Besides, these they
have shown reasonable adaptation to tropical heat and diseases.
Zebu cattle are in general considered to be indigenous to the
Indian sub continent, of which India and Pakistan are considered
to be their natural habitat where they have been domesticated
breed and developed to their present status over the years.

As early as 1938, Oliver, in India made the first attempt to
classify the various Indian cattle breeds. Das Gupta in his book
"The cow in India" volume 1 mentioned about his efforts in this
direction. But finally Joshi and Phillips (1953) after reviewing the
previous work classified all Indian Zebu breeds into six major
groups and published the same by FAO in a manual of Zebu
. cattle. In general, the cattle from the drier regions well built, and
those from the heavy rainfall areas, coastal regions and hilly
regions are smaller in the built. Zebu has relatively lower basa
metabolic rate, better capacity for heat dissipation through
cutaneous evaporation these adaptations to tropical heat and resistance to disease specially the tick-borne diseases.

Native places of some important cow breeds are as follows-
Sahiwal- Montgomery; Pakistan; Red- Sindhi, Sindh- Pakistan;
Gir- Kathiavar, India; Deoni- Hyderabad, Andhra Pradesh, India;
Hariyana- Hisar, Rohtak, Karnal and Gurgaun, India; Nimari-
Khrgaun, M.P., India and Mewati or Kosi- Mathura, Alwar and Bharatpur- India.

1.1 POSITION OF COWS IN THE LIVESTOCK ECONOMY

Besides these the cows possess some interested achievements listed as below-

2.44% of the total geographical area and 11.29 of the total agricultural area of the land have been utilized in India for this purpose and maximum income comes from the bovines among all the cattle. In total national income, 15% comes from the bovines and buffaloes, about 55% of the total milk in the country is obtained from the buffaloes and cows rank on second position. A World average consumption of milk is 303 ml/ head/ day, while that of the India is about the 130 ml/ head/ day.
Some other comparative aspects are also available for example- An average milk production of cows in India is 175 liter which is very low in comparison to buffaloes which is 490 liter/year; but both the cattle attain their adulthood in average of 18 months and usually have the average life span of about 18 years but it takes 5-5.5 year to achieve the adult stage. The average milking duration of cows is 8 months while that of the buffaloes are 9 months. The milking capacity of cows increases till 6 weeks after birth of calf afterward gradual decline is recorded in their capacity.

Some other records related to bovines and particularly the cattle are given as under-

On the basis of utilizations the bovine breeds have been divided into three groups viz-

1- Milch breeds  
2- Dual purpose breeds  
3- Draught breeds

These can be represented as below-

**BREEDS OF COWS**

(A). Indian breeds (humped)

a- Milch breeds

i. Sahiwal  
ii. Red – Sindhi  
iii. Gir  
iv. Deoni

b- Dual-purpose breeds

i. Hariyana  
ii. Tharparker  
iii. Kankrez  
iv. Ogol  
v. Mewati  
vi. Rathi
(B) Foreign breeds (humpless)

(a) Milch

i. Holstein frigian    ii. Brown swiss
iii. Ireshair         iv. Garnshi
v. Jerssey            vi. Red den

(b) Meat purpose

i. Heerford           ii. Everdeen
iii. Angus            iv. Short horn
v. Shantagartudish   vi. Charolyas
vii. Brongus

Among the above cow breeds; the milch breeds are reared for milk, dual-purpose breeds for both milk and works, while the drought breeds are poor in milk production but are excellent in the working purposes. The oxes of milch breeds are usually dull in working purpose.

When the bovines are reared under healthy and hygienic conditions the cows take and hygienic conditions the cows take 3
to 4 years to attain the sexual maturity while bulls take only 2 years and 6 months. The first pregnancy period in the cows is in the age of 4 years and the gestation period is of 282 days. The gap between two pregnancies is recorded as the duration of 12-14 months, Heat cycle is of 21 days; the duration of heat period is 24-36 hours. After giving the birth to a calf the cow again becomes heat after 90-120 days even is going on the milking period. Newborn calf should be provided the colostrum only about 1/10 part of its body weight.

Besides these some other interested peculiarities related to cows are also highlighted here as below-

The Sahiwal is the best-reared cow in Indian milch cows and are mostly found in the Punjab. The native place of Sahiwal is the Sindhu river valley and Montgomery district in the Pakistan. The Seeri breed of cow is found on the hills of Darziling. The heaviest breed of cow is Kankhage and it is found in the Kachchh, Mumbai, Surat and Baroda. Mewati and Cosi are the two names of the same cow breed, which is found at the Alwar, Rajasthan. The elongated body with mallow appearance to touch is the main identifying character of the good milking cow. The most milk-providing breed of the cow in the world is UBREBLANKA of the
Cuba. This cow provided 10474 litre milk in 160 days, like this 107.3 litre/day is the record amount of milk given by this cow; but it should be remembered that the queen of milk of the world is a goat related to the SONEN breed of goat in Switzerland which produced 800 litre milk in a single milking period of 250 days. The average normal body temperature of the cow is about 101.5° f and to record the body temperature of cow the thermometer is known by touching the coecigeal artery under side of the tail root while that in other animals like horses etc. is counted by touching the maxillary artery underside the jaws for the intravenous injection the needle is introduced in the juglar vain by throwing it on the land.

Cattle are the foundation of agriculture in India. Besides, their importance further increases for the reason that majority of the people are vegetarian and milk and milk products constitute the only source of the animal protein in their diet.

According to the recommendation of the Nutrition Advisory Committee of the Indian Council of Medical Research, well balanced daily diet of a person should along with other animal proteins, contain 383 grams of milk. The provision of efficient
bullocks for cultivation and high yielding cows and buffaloes for more milk production thus assume paramount importance.

The cattle population among the bovines in Rohailkhand has over burdened its gross cultivated area. There are about 476 bovines for every 100 hectares of cropped area along with 532 persons of rural population (Livestock Census of U.P. 1998) various studies have shown that existing stock is far in excess. It has been argued that to meet the current demand for livestock products and services, the current replacement and growth requirements of adults stock can be met with reducing mortality rates among young stock and the better feeding alone, due to increased productivity of milk, works and also calving rates (Vaidyanathan, 1978). This requires major changes in organizational set up in the agricultural sector. Feed and culling practice has always favoured cow as an efficient converter of rough forage and to a lesser extent the male cattle as a more useful source of draught power (George, 1986). The wide variations in the composition of cattle herds between regions have also been highlighted which are unrelated to the composition of respective human populations. Specialization in the use of cattle for work, adoption of cross-bred cows besides buffaloes for milk,
reflect adaptations in response to economic forces in Western U.P. Cow has a constant struggle against the forces of nature, and climate affects animals, both directly with expression on their systematic function and indirectly by governing the availability of nutrients. Changes in climatic situation prevailing in different seasons, particularly high ambient temperature and humidity affects all productive function of animal through their heat regulation mechanism. The environmental temperature modifies the ability of mammals to secrete milk through affecting the neuro-endocrine system and altering appetite and nutrient intake of animals. The characteristic environment of this Research Station, NRI established at the Bareily zone and other research centers belonging to Aligarh and Saharanpur district have climatic conditions with most variability as semi arid, plains and hilly etc. The temperature and ranges of other parameters are as follows

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Winter</th>
<th>Summer</th>
<th>Rainy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range</td>
<td>3.9-28.20</td>
<td>11.00-40.00</td>
<td>15.20-35.20</td>
</tr>
<tr>
<td>Rainfall (mm)</td>
<td>96.07-231.03</td>
<td>1274.80</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>71-96</td>
<td>33-91</td>
<td>80-95</td>
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shows were classified and statistically analyzed to study the season wise distribution (Snedecor and Cochran, 1976; Saxena et al. 1983).

The environmental factors are also highly effective in determining the growth, multiplication and infection/ re-infection of parasites. They are likely to be favorably or adversely affected by the seasonal conditions. It is often the environment that determines the survival of free-living stages and ultimately the intensity of infection/ reinfection to the host. Unlike bacteria and viruses, the arthropodan parasites (except lice, some mites and flies) do not multiply on the bodies of their hosts. It is thus obvious that a detailed knowledge of the effect of both macro and micro-environment on the free living stages of parasites is essential for planning and handling the effective control measures against them.

Let alone the inadequacies of breeding and feeding aspects, the management and health care of such a huge bovine population is seriously telling upon their production efficiency. The diseases caused by bacteria, virus and fungus apart, the ectoparasitic infestation is too acute a menace deserving an immediate attention. These ectoparasites not only inflict direct
attack, but which are responsible in causing a greater damage through transmission of various types of diseases leading to reduction in the production, potential and quality/quantity of produce.

Enormous losses in livestock productivity are caused due to unhygienic situations of management when a very large number of insects/pests harbour the animals; suck their blood; introduce infections; create nutritional deficiencies; depress their thriftiness and vigour and reduce their productive potential. This type of loss in animals is comparable to losses caused by rodents in ricks and granaries. Heavy losses are incurred by the livestock industry around the world as a result of ectoparasitic infestation. In animal's severe infestation by ticks, lice and mites lead to reduction in feed intake, lowered digestibility and loss of rhythm in rumination monitored through irritation caused by ectoparasites. This results in the diminished body weight gains in growing animals.

The livestock parasitism in general and that of cows in particular, therefore, happens to an important constraint in their production. Any attempt to combat, it in cows and to help them grow, reproduce and produce well will go a long way to benefit the
health and economy of the poverty stricken people with whom they are closely associated. Of the Bacterial, Viral Protozoan, Helminth and Arthropodan parasites that usually affect them the Arthropodan parasites affecting cows include Acarina (the ticks and mites), Anoplura and Mallophaga (the lice), and Diptera (the flies).

The role of ecotoparasites that comprising ticks, lice, mites and flies well known in the fields of medicine and veterinary practices. Besides, causing enormous diseases, these parasites act as disease vectors. Information about the prevalence and ecogeographical distribution of ectoparasites in India, particularly in regard to their mode of attack on livestock is limited. Some systematic studies have been carried out on the infestation of ticks on small animals, monkeys, birds and cattle (Trapido et al. 1964; Rajagopalan et al. 1968; Rajagopalan, 1972 and Bhat 1974).

No specific studies are on record about the role of blood sucking ectoparasites in the plains of Western U.P. even though the bulk of bovine population in the state is heavily infested by varied types of ectoparasites causing huge economic damage. Whereas, concerted efforts have been made to eradicate mosquitoes because of their direct involvement in spread of
malaria, very little information is available till date about the distribution of ticks, lice, mites and flies. Sparing investigation have been carried out only in few selected pockets which have not been sophisticated any considerable economic bearing in the final objective of production enhancement.

Normally, the complete eradication of arthropodan parasites is not practically possible owning to their high rate of reproduction and survival. One has to, therefore, aim at their effective control and to ensure that the population does not exceed the levels compatible with economic production. At present, most of the parasitic control is productive in orientation and is best almost entirely on the regular use of insecticides and acarisides. It, no doubt, provides protection against the seriousness of the diseases and mortality, but such treatments are not effective in the preventing production losses, which still occur as a result of reinfection in between the treatments. The use of cheap, safe and efficient measures to prevent arthropodan parasites, therefore, happens to be the best and the most economical method of combating them.

It has been reported by O'kelly and Kennedy (1981) the tick-
'Boophilus microplus have caused huge economic losses in cattle
production in several countries. A study under controlled nutritional conditions has revealed that 65% of the body weight loss in Hereford Steers resulted from tick infestation due to an anorectic effect while 35% loss was assigned to a specific effect. Further, these authors reported lowered packed cell volume in the blood of infested animals as compared to the control. The amount of blood flushed out by these ectoparasites is believed to vary according to the species involved. Experimental estimates indicate that an adult female tick is capable of sucking from 0.5 to 2.0 ml. of blood/animal/day. At this rate an animal harbouring several thousand ticks is likely to lose a substantial quantity of blood each day. Studies on the severity of infestation indicate that 500 ticks are sufficient to prove fatal for a calf (Barnett, 1961). Though very heavy infestation exhibiting deplorable and pathetic scenes are encountered in nature, yet it is usual for animals particularly under unhygienic environments to carry a few hundred ticks at a time leading to not incited impact termed as 'tick worry'. Such a situation emanates probably as a result of the combination of several factors that reaches the highest point irritation caused as a result of ticks, lice, mites and flies. This consequently leads to wounds followed by secondary infections of several of
microorganism. The gradual but sustained loss in vigour and potential, through unobservable, leads consequently to a tremendous reduction in feed conversion efficiency both in ruminants and non-ruminants.

As outlined above the damage due to tick, mite, lice and flies or any other insect to livestock may be direct (as parasite) or as a disease vector. The direct impact can be visualized through irritation/ restlessness, interference in the act of grazing or mangering, discomfort during the act of rumination/rest resulting in loss of appetite, decline in blood volume, poor health, rugged coat, loss of shine reduced vigour, emaciation and may in severe cases, lead to coma and death. Indirect impact, on the other hand, leads to damage hides and skins, loss of carcass grade, blood toxicity and ulceration culminating finally in the loss of immunity against dreadful diseases. Let alone the nutrient losses sucked out through blood sucking, the resultant discomfort and irritation forces the host to spend energy in wasteful acts like nervous rubbing to mitigate uncompromising irritation resulting at time paralytic effect of the limbs. Production of toxins during certain developmental stages of ticks, specifically the adult females or at times, the nymphs create havoc with the host. The
diseases initiate from extremities specifically the hind legs creeping and rooting gradually in various parts of the entire body specially the unexposed pockets. These toxins apparently cause neuromuscular block, though sensitivity of the motor nerves may remain unaffected and muscles too, may respond normally to direct stimulation. Respiration too may not be affected (Rose and Gregson, 1956; Murnaghan, 1958).

Mites plays a significant role in the transmission of cutaneous diseases in domestic animals like spirochaetosis rekettsial pox, persistent scabies or sorcoptic itch, sorcoptic mange and black muzzle of cow. In view of the immense losses through ectoparasitic infestation as mentioned above it is only prudent to suitable control measures so as to bring the animals back to a hygienic status.

Ectoparasitic infestation in domestic animal is a worldwide problem and about 80% of the world populations of livestock are infested frequently. Their occurrence and seasonal dynamics are greatly influenced by varying climatological and ecological factors. Correspondingly, the diseases transmitted by them also have the different epidemiological patterns. Therefore, tick fauna of every region to know the information on which further epidemiological
studies of tick-borne infections can be ascertained. However, tick, transmit various haemoprotozoan diseases like babesiosis, theileriosis and rickettsial diseases such as anaplasmosis and ehrlichiosis in domestic animals. So far in Chittoor district in Andhra Pradesh, Rebello and Ruben (1966) and Satyanarayana (1976) have surveyed the tick fauna of birds, small mammals and of domestic cattle. No separate study has been carried out for the prevalence of Ixodid ticks in crossbred cattle in Rohailkhand area.

1.2 CONTROL MEASURES AND THEIR IMPACT

The prevalence of diseases in relation to tick vector is dependent on climatic conditions of the country. In India, we found optimum conditions for propagation of ticks during major parts of the year and such ticks transmit many Protozoans, Bacterial and Viral diseases. There are no well-defined endemic areas of the diseases but they occur in wider part of the country. Production losses due to tick borne Protozoan infections in this research place are not well documented in literature. However, such losses are of significant economic value. Besides this, losses are also due to blood loss and annoyance. Tick infestation has posed a serious threat to our crossbreeding programme as the
exotic and crossbred animals are highly susceptible to blood Protozan infections.

*Boophilus microplus* is an important tick responsible for the transmission of *Anaplasma marginale* and *Babesia* spp. in cattle, in Rohailkhand. This Ixodid tick is also voracious bloodsucker. Hunter and Hooker (1907) estimated that nearly hectoliter of blood might be lost in one season from a large mammalian host through tick infestation. The ecology and biology of *Boophilus microplus* have fairly been studied little information is yet available on potential role in the transmission of diseases and the suitable control measures. Control of this tick is also necessary to prevent live body weight losses from the direct effect.

A number of indigenous medicines and modern composite drug mixtures mostly composed of chemicals have been tried to control ectoparasitic infestation in adjoining regions of Rohailkhand. It is only to be ascertained that the chemicals to be used must possess defined qualities as they should not be harmful to the animal body, should eradicate ectoparasites and must be cheap and easily available. Many experiments have been tried in this behalf. It is reported that insecticides or acaricides regularly used for the control of ticks and mites infesting cows
involve not only the conventional chemical arsenic but many of them include the chlorinated hydrocarbon groups such as DDT, BHC, Malathion etc. Which eventually have proved to be ineffective against the development of resistance by ectoparasites. Consequently, organophosphate group of insecticides have been tried to control the incidence and virulence of ticks and mites. FAO report (1956) states that in the United States 0.5% Malathion completely killed both unfed and engorged stages of *Amblyomma americanum* and *Otobius megnini* in animals and could minimise the incidence of infestation. The entomology research division of U.S.D.A. has recommended Malathion and fen Chlorophos (Ronnel) and dips of Lindane or Toxaphane for the control of ticks on cattle (Drummond *et al.*, 1960).

The *Cattle mite* can be controlled with 0.3% DDT dip or 0.5% as spray. Gama BHC at 0.02% emulsion dip is reported to eliminate all species of cattle mite. Toxaphene or Malathion as 0.5% dip or spray are also recommended particularly against *Linognathus*.

Alugon is reported to work very effectively against tick in cows and buffaloes (Bansal *et al.* 1978). Hunger (1970) is reported to have tried certain organic phosphate mixtures i.e.
Diazinon, Malathion etc. as shower, dip or spray up to 0.1% as an allegedly effective control measure against tick in cattle.

For the control of ticks and mites arsenic dips have been practiced which check but could not eradicate the parasite. Hungerford (1970) tried the used of vetamax premier (Nicholos) and reported that it can eradicate the mites if used judiciously. Chlorinated compound like DDT, BHC, toxaphene and aldrin have also been used. It is apprehended, however, that parasites develop resistance against these chlorinated preparations. As such, the use of these insecticides has been prohibited so as to guard against probable health hazards. This phenomenon of developing resistance against the insecticides formulations including organic phosphate is a great challenge in evolving effective control measures (WHO, 1956). Gaines (1952) devised a methoxychlor antiparasitic preparation in concentrations varying from 0.5 to 1.0% for use in dairy and beef animals. Barnes (1953) suggested that complete eradication of ectoparasites is possible through frequent use of Pyrethrum. On the other hand Hungerford (1970) has reported encouraging results through use of Diazinon (0.45%) in controlling the menace of tick in livestock.
It was thus envisaged to undertake studies on various control methods for the eradication of these ectoparasites. As a preliminary to this survey for this ectoparasites in and around the adjoining area of Rohailkhand are also undertaken. The information to be collected on the prevalence and biology of these ectoparasites may provide the base line data for evolving suitable control measures.

The project entitled “Studies on the ectoparasites (Ticks and Mites) of Cows in Rohailkhand” adjoining district-Bareily, Badaun, Saharanpur, Rampur, Etah and Aligarh and were executed with the view of the following aims and objectives:

1. To put on record on the arthropodan parasites of cows in the adjoining areas of Rohailkhand.

2. To probe into the seasonal rhythm of their infection, if any and its consequent effect on the host health.

3. To examine the efficiency of different curative/preventive measures recommended against them and to suggest a prophylactic/treatment schedule to combat the menace of their infection.

4. To list the efficacy of different insecticides and acaricides.