Livestock farming is essential for millions of poor households across the country not only as a source of income but also as a major source of protein, supplementary nutrition, fertilizer, fuel and a store of wealth. However, they are prone to many health problems leading to economic loss, weight loss, delayed maturity, high mortality rate, low fertility rate, etc., apart from making them susceptible to other infections. A better disease control programme is essential in order to protect the health of employees and the animals in their care. A sanitation program based on both safety and quality is the best choice for producers that are committed to their customers, workers and the environment. Animal biosecurity is the product of all actions undertaken by an entity to prevent introduction of disease agents into a specific area.

Disease spread in the farm:
Infectious diseases can be introduced in to dairy farm by:
- The introduction of diseased animals or introduction of healthy animals that have recovered from disease but are now carriers.
- Vehicles, equipment, clothing and footwear of people.
- Feedstuffs, especially high risk feed stuff which could be contaminated with faeces.
- Contaminated water (surface water, stream sand rivers etc.)
- Other species such dogs, cats, wildlife, rodents, birds and insects.
- Manure handling especially by outside people.

Disease control and sanitation:
- Isolation and quarantine.
- Nutritional balance
- Vaccination programme.
– Proper disposal of infected litter material or manure.
– Use of antibiotics.
– Control of arthropod, pests and external parasites.
– Proper sanitation and disinfection.

Selection of purchased animals:
Select all the animals from known source and health status to reduce the chance of infection. Never bring the animals without knowing the vaccination history.

Isolation and quarantine:
– Strict isolation prevents contact between animals after arrival on farm and reduces the chance of spread of a disease.
– Quarantine all new purchased animals at least for 40 days.
– Cattle must not allow for common grazing.
– Prevent manure contamination of feed and equipments used orally.
– Routinely clean and disinfect feeding equipment and cattle handling equipments.
– Isolation simply means the separation of diseased animals from healthy ones. Complete isolation is particularly important in case of contagious diseases. The sick animals, their belongings and beddings are removed promptly and totally to a separate housing set up. Partial isolation is followed in case of non-infectious problems like traumas, nutritional diseases and burn injuries. The feeding and watering facilities of sick animals are also separated.

Nutritional balance:
– A number of infectious agents are opportunists and infection occurs in weakened animals. Proper nutritional balance and adequate feed intake will help promote immune function and resistance.
– Some vitamins and minerals and overall nutritional balance have been identified as influencing immune function.
– Nutrition can also influence physical barriers to infection (e.g. skin, mouth and tissue).

Use of antibiotics:
Antibiotics are used as prophylactic agents to prevent occurrence of disease, besides its use as therapeutic agent. Addition of Small amounts of antibiotics to feed results in better feed utilization and markedly decreased morbidity and mortality among animals.

Deworming and vaccination:
Common chemicals like piperazine salt, Thiabendazole, Phenothiazine, Hexachlorethane, Carbon tetrachloride, Hezachlorophene, and dicetol etc. are use for deworming. Young animals are dewormed every month older can be at 4-6 month interval and females are dewormed after parturation. Adult stock are dewormed at twice a year once before mansoon season in (May-June) and during monsoon (August-September).

Vaccination is used as preventive measure. The

<p>| Table 1: Analysis between age of calf and deworming |</p>
<table>
<thead>
<tr>
<th>Age of calf</th>
<th>Deworming</th>
<th>Age of calf</th>
<th>Deworming</th>
<th>Age of calf</th>
<th>Deworming</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd, 4th and 5th day</td>
<td>Sulmet full dose on 3rd day and ½ doze on 4th and 5th day.</td>
<td>2½ month</td>
<td>Piperazine</td>
<td>6 month</td>
<td>Phenovis</td>
</tr>
<tr>
<td>7 day</td>
<td>Piperazine</td>
<td>3½ month</td>
<td>Phenovis</td>
<td>7 month</td>
<td>Piperazine</td>
</tr>
<tr>
<td>30 day</td>
<td>Sulmet</td>
<td>¼ month</td>
<td>Sulmet</td>
<td>9 month</td>
<td>Phenovis</td>
</tr>
<tr>
<td>1½ month</td>
<td>Piperazine</td>
<td>5 month</td>
<td>Piperazine</td>
<td>12 month</td>
<td>Phenovis</td>
</tr>
</tbody>
</table>

<p>| Table 2: Vaccination schedule in dairy farm |</p>
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of disease</th>
<th>Animal to be protected</th>
<th>Type of vaccine</th>
<th>Time of vaccination</th>
<th>Duration of immunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anthrax</td>
<td>All farm animals</td>
<td>Spore vaccine</td>
<td>Premonsoon once in year</td>
<td>One season</td>
</tr>
<tr>
<td>2.</td>
<td>Black quarter</td>
<td>Cattle buffal and sheep</td>
<td>Formal kill vaccine</td>
<td>Premonsoon once in year</td>
<td>One season</td>
</tr>
<tr>
<td>3.</td>
<td>Haemorrhagic septicaemia</td>
<td>Cattle buffal and sheep</td>
<td>Oil adjuvant vaccine</td>
<td>Premonsoon once in year</td>
<td>One season</td>
</tr>
<tr>
<td>4.</td>
<td>Brucellosis</td>
<td>Cattle and buffalo</td>
<td>Cotton strain 19 (live)</td>
<td>At about 6 month of age</td>
<td>3-4 calving</td>
</tr>
<tr>
<td>5.</td>
<td>Pox disease</td>
<td>All farm animals</td>
<td>Vaccine from pox scab</td>
<td>Due to outbreak</td>
<td>One year</td>
</tr>
<tr>
<td>6.</td>
<td>Foot and mouth disease</td>
<td>Cattle buffal and sheep</td>
<td>Poly valent tissue culture vaccine</td>
<td>At about 6 month of age and booster at 4 month</td>
<td>One season</td>
</tr>
<tr>
<td>7.</td>
<td>Rinderpest</td>
<td>Cattle and buffalo</td>
<td>Caprinised for zebu cattle</td>
<td>At about 6 month of age</td>
<td>Long life</td>
</tr>
<tr>
<td>8.</td>
<td>Tuberculosis</td>
<td>All farm animals</td>
<td>B.C.G. vaccine</td>
<td>At about 6 month of age</td>
<td>One to two year</td>
</tr>
</tbody>
</table>
administration of immunoprophylactic agents either prevents establishment of the pathogens in the hosts or leads to the neutralization of their toxic metabolites (toxins). The ring vaccination is done to all the susceptible animals at a radius of 5 km. from the focus of infection.

**Proper disposal of infected litter material or manure:**
Proper disposal of infected litter material/manure/animal waste from the animal house is highly essential to prevent spread of various infectious diseases. Pathogens like FMD virus, *Bacillus anthracis*, *Clostridia* spp., *Salmonella* spp., *E. coli* spp. and *Coccidia* in animal wastes have frequently been suspected to be the cause of serious out-breaks of diseases. Animal wastes are highly conducive for mosquito and fly breeding. Several kinds of parasitic larvae thrive in wastes. Farm wastes, therefore need to be disposed of properly to eliminate the threat of disease in animal housing set up.

**Control of arthropods pests and external parasites:**
Pest control is necessary because they act as mechanical vectors for many disease causing agents. The control measures are:-

- Treatment for external parasites in infected animals.
- Regular cleaning of animal houses.
- Sealing of all cracks in the floor and walls of livestock housing with cement or mud.
- Removal of grass/plants around the barn.
- Collection and disposal of all litter out of animal contact.
- Spraying of house with an appropriate pesticide every two weeks if possible.
- Reduction in breeding places for flies. Exterminate rats and mice by using traps, glue boards, and poisons. Care should be taken to place poisons where the animals cannot contact them.
- Routinely treat the grounds and facility with an insecticide like Malathion, parathion, neuvugon etc.
- Positive airflow from the interior of the shelter to the outside will make it harder for flies to enter the building.
- The animal shed should also be regularly cleared of cobwebs, spider webs and sprayed with insecticides at least once in a month.
- Keep rodents from entering a building by covering drains, weather stripping, and sealing holes and doorways.

**Sanitation in animal shelter:**
- *Physical cleaning* is defined as the removal of urine, faecal matter and other organic material from the environment. It should result in a visibly clean surface but may not remove all of the harmful pathogens.
- *Disinfection* is the process that will kill most of the contaminants in a given area.

Sanitation is defined as the combination of both cleaning and disinfection and is a requirement for all shelters.

**Movement control** Records of all visitors in farm both human and domestic animal is essential. Traffic control should stop or minimize contamination of milk, cattle, feed, feed handling equipment and equipment used on cattle or to process milk. The only equipment allowed should be the loader used for handling the feedstuff. In large pits, it may be acceptable to allow feed trucks to enter, provided they are loaded at least 100 feet away from the working face of the stored feed.

**Water quality and water system:**
The sanitary quality of water is determined by microbiologic testing for coli form and other microorganisms. Water supplies (well area, ponds and streams) should be protected from fecal contamination where possible. Watering cups, tanks and troughs should be designed and located for ease of cleaning and reducing contamination of feed and water. Prevent excessive water on ground and floor around water systems.
- Water odor, taste, excessive mineral or compounds necessitate the need for testing of water sources.

**Foot bath and spray race:**
Foot bath is important in protecting animals from contagious diseases and pets. A foot bath is a tank 6x3 m at bottom, 12x4 m at the top, and 0.3 m deep and constructed near the entrance. This tank is filled with germicidal solutions. Sprays races are for spraying germicidal solutions on animals for controlling pests, fly and bacteria. Spray nozzles are fixed

### Table 3: Chemical agents used in shelter sanitation

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name</th>
<th>Usage</th>
<th>Sr. No.</th>
<th>Name</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acid detergens</td>
<td>Remove dried urine particles on equipment and cages</td>
<td>4</td>
<td>Quaternary ammonium compound</td>
<td>Kill enveloped viruses.</td>
</tr>
<tr>
<td>2</td>
<td>Alkaline detergens</td>
<td>Remove oils left on surfaces from food, faecal material, or animal skin and hair.</td>
<td>5</td>
<td>Phenols</td>
<td>Kill enveloped viruses.</td>
</tr>
<tr>
<td>3</td>
<td>Iodine</td>
<td>Kill enveloped viruses (Feline Rhinotracheitis).</td>
<td>6</td>
<td>Products containing chlorine (hypochlorit)</td>
<td>Kill enteroviruses (Parvovirus, corona virus).</td>
</tr>
</tbody>
</table>
overhead at a height of 2 meters above the platform.

Training and education of personnel:
Personnel training and education are essential components of an effective infection control program. All personnel, including temporary personnel, students and volunteers, should receive education and training about injury prevention and infection control. Training should emphasis on awareness of the hazards associated with individual work duties, and prevention of zoonotic disease exposure.

Record keeping:
Records will be maintained on immunizations and exposure and injury incidents. Report and record changes in health status (e.g. pregnancy) that may affect work duties. Records related to vaccination programme, daily routine, medicine availability, feeding and labours hygiene are helpful for disease control practice.
In this way we see that by the proper routine program in the dairy farm help us in control disease and prevention. We should follow the all ruler and regulations related to dairy farm hygiene.

LITERATURE CITED


Berry, Joe G. Livestock Disease: Cause and Control, Oklahoma Cooperative Extension Fact Sheets Services ANSI 3999.

Eysker, M. (2002). Strategies for internal parasite control in organic cattle, Utrecht University, P.O. Box 80, 165, 3508 TD Utrecht.


Sigurdson, Chris G. Practical Hygiene and Disinfection on Dairy Farms.