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A way to reduce Pathogens microorganisms in farm animals dung for healthy fitness of human

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Abstract
Cattle Manure always contains microorganisms, and a small part of the enteric microorganisms is pathogen. Pathogens are microscopic organisms that cause or have the potential to cause disease. Many potential microbes for cattle and human also can be find in manure of individually poultry farm animals. These pathogens include bacteria, viruses and Protozoan. The cattle manure harbors microbial elements that make it foundation of contamination in the environment and infections in humans Pathogen microorganisms gain acquire to different sensitive host, water or flora, there can be health dangers for human. In this paper, we focus the bacterial composition of cattle manure and the reduction of pathogen in microorganisms that may be executed with the aid of microbiological, chemical or physical techniques as well as the benefits and drawbacks of these methods.

Keywords: cattle manure, pathogens, control methods, livestock, bacteria, viruses

Introduction
Manure is containing to incorporate pathogen microorganisms commonly, fecal Coli forms. In that respect are large number of pathogens are connected with untreated manure without suitable treatment and management, these pathogens may pose a serious health and it is danger to rural peoples, crops, land quality and water quality [1]. Cattle waste contains several microorganisms such as viruses, protozoa and bacteria [2]. Some organisms are pathogenic for animals as well as humans and can be communicate to human beings through direct or indirect contact [3]. The kinds of pathogens occurring in livestock wastes differ with animal species, dietary sources, fitness fame and age of the animals, physical and chemical characteristics of the manure produced as well as the storage facilities of the manure [4, 5]. Livestock industries are developing enormously alongside with the human population ensuing in the enlarge rate of technology of organic residues, which pose issues that warrant strategies for good management [6]. A few damaging microbes, for example less than 1% of bacteria, can invade our body and make us ill. In the past several techniques was used to removed pathogens from manure but it could not possible to completely removed these organisms from the environment, however we can be minimized these microbes from the manure through the upgrade physical, chemical and biological methods [7], in this method I will use some chemicals in the livestock, making good manure so that its better fertilization can be done with plant roots, after that we calculate pathogenic organisms, and measure our success at controlling them.

Pathogens and their effect on human body
The pathogen content in compost is indisputable, all excrement contains fecal Coli forms and fecal streptococcus [8]. These pathogens contain viruses, protozoan and bacteria those microorganisms are generally found in untreated cattle manure with the greatest danger of infection in humans [9]. Nevertheless, because of the diet fed to livestock, trying and often-unsanitary living conditions, antibiotics fed to livestock in low daily doses, and the massive concentration and lack of treatment for livestock manure, it can present life-threatening dangers to human wellness. Pathogens can be transfers to humans directly contact with animals and animal waste or indirectly through polluted water or food, the food like vegetables that are fertilized with unprocessed cattle dung. Simply getting into contact with a pathogenic organism does not necessarily imply that an individual will become sick, but some pathogens are highly dangerous, meaning that introduction to even a couple of pathogens can bring about affliction others are less harmful [10]. The absolute most generally perceived bacterial pathogens from domesticated animals include microscopic organisms for example Shiga-toxin producing Salmonella, Campylobacter, Yersinia and Escherichia coli (E. Cole). Most microbes can live and even multiply in situations outside of the creature, for example, cultivate creature fertilizer. These microscopic organisms can initiate emesis, fever, sickness, stomach torments and diarrhea in peoples, that is directly-indirectly expose to contaminated manure [11]. Regular as organisms, protozoa and viruses can be available in creature manure. Rotavirus is the most ordinarily perceived pathogenic infections in cattle manure [12]. Viruses cannot regenerate outside of the cattle, but are capable of living for long times in the surroundings depending on environmental situations. One overview found that rotavirus could make due in a manure storage facility for over a half year [13]. Several outbreaks of human disorder and destruction have been attributing to drinking water sullied with animals manure.

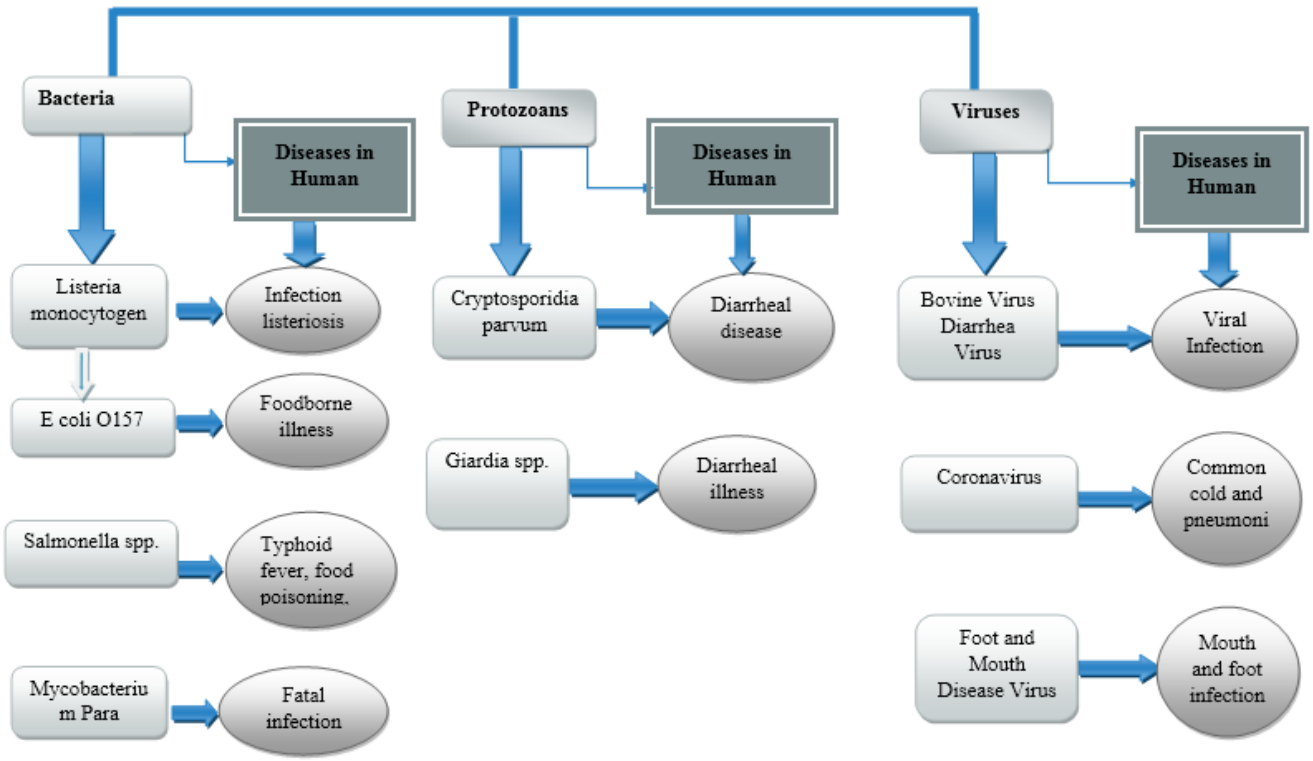

Fig 1: Pathogens and diseases caused by pathogens.

- **A way to reduce Pathogen microorganisms**

The following steps and methods are encouraged to prevent the spread of infection among cattle and transmission to farm labors and nearby residents.

Microbiological Method

Biological Aeration

Aeration is one of the most important technique to remove pathogens from manure it's includes exposing manure to air and oxygen. Natural aeration includes storing manure in large, shallow (less than 5 foot. depth), storage structures so enough oxygen can normally reach the microscopic organisms. These types of structures are uncommon in Minnesota or other northern atmospheres. Mechanical aeration consists of pumping air into a storage structure. Aeration is particularly possible against infections in cattle and pig slurry [14, 15]. The combination of supplemented warmth and aeration can further diminish pathogens in cattle manure [16]. Storage at 68°F for two to four days in an aerated system lessened infectious viral load 90% We have to require 300 days for getting a completely reduction at 41°F out of a non-aerated system. All danger microbes like Cryptosporidium oocysts, fecal Streptococci, Salmonella and E. Coli are totally destroyed from mixture of aeration and high temperature (122°F) in cattle manure by 24 hours [17]. Due to the costly nature and the diminished effectiveness of aeration systems during cool climate usually utilized as a part of Minnesota.

Biological mixture of soil and manure

Treated cattle Manure is a naturally rich soil amendment created by the decomposition of organic resources. During the process of treating the manure process, organic materials for example animal manure fertilizer and livestock carcasses are separated by microorganisms. Dynamic treating the soil produces heat, water vapor and carbon dioxide (CO2). The finished result of fertilizing the soil is a dim, earthy smelling material. During fertilizing the soil, temperatures can reach 150°F. Most pathogens that are destructive to people can be destroyed at 131°F or higher. The Minnesota Board of Animal Health suggests 2 warmth cycles of more prominent than 131°F to ensure pathogen destruction. In any event, there is no proof that treating the soil with manure destroys prions, the abnormal proteins believed responsible for infections for example Bovine Spongiform Encephalopathy, Chronic Wasting Disease and Scrapie.

Microbiological digesters of Anaerobic

Primarily utilization of anaerobic digesters in the fertilization of manure stabilization and odor control. They show also to remove E. coli and Salmonella typhimurium in the digested slurry. At a digester temperature of 95°F, 90% diminishment in these microscopic organisms required less than three days. Several livestock producers, mainly those raising dairy and swine, may as of now be using anaerobic fertilizer treatments for example, significant pits in their operation. Farms that make solid waste can adjust their operation to preparing fertilizing of the soil. Uses of developing interest for the utilization of anaerobic methane digesters for cattle manure fertilizer treatment [19]. Using the aeration or anaerobic digesters by producers wishing that is a method for pathogens control will be required high capital investments but other advantages, for example, group of substitute energy and odor control may validate the extra amount for some animal manure operations.

Anaerobic lagoons

Anaerobic lagoons are widely used in temperate atmospheres for the treatment and brief storage of swine manure. It is a simple system that can be managed by the farmer and it can be very effective in decreasing organic matter and nutrients if properly designed and operated. Although microorganisms can survive anaerobic conditions for extended periods, most pathogenic microbes are removing in the 30 days [20]. Salmonella and microbial pointer decreases in swine waste lagoons elimination of enteric microbes was approximately 90 to 99%. elimination in perfringens spores was significantly less than other enteric pathogenic microorganisms only in one cell or essential lagoons 75%-83% and in secondary lagoons more than 92%. Salmonella bacteria was recognized at liquid concentrations as high as 1.8 x 10* MPN 100 ml in essential lagoon. In the past various studies was done by the researchers showed a 99.7% elimination of pathogen microbes from a 2,550-head nursery in the anaerobic lagoon compost manure dung.

Chemical Method

Ozone

Ozone is a powerful oxidizing agent and this is very effective for eliminating microorganisms from the manure. E. coli bacteria counts were removed by 99.7% and after the treatment of manure with ozone we found 90% coliforms are eliminated from the manure. Nevertheless, organic resources found in cattle waste to interfere by ozonation and hence a pretreatment like solids disconnection would be necessary for a powerful ozonation method.

Pasteurization

Temperature of 1570 F to be maintaining for 30 minutes is necessary for the Pasteurization of cattle manure. This type of manure is very powerful for removing all pathogenic microbes but would be very expensive on most livestock process unless it occurs as part of a digesting or composting system.

Chlorine

Chlorine is a technique of disinfection are generally used for drinking water. Chlorine is very powerful against bacteria but less powerful against protozoa and viruses. Unfortunately, the cattle manure consist high organic matter that is involve in substantially inhibits of manure for the chlorine effectiveness. The chemical reactions are present when natural matter and chlorine are showing to each other and produce toxic and carcinogenic by-products too.

Ultraviolet light irradiation

Two acids one is deoxyribonucleic and other Ribonucleic of pathogens are destroying by the UVI. There are no remaining mixes presented after ultraviolet light decontamination and the nutrient substance of cow's fertilizer is not influencing by ultraviolet light exposure. Viruses are impervious to ultraviolet light irradiation treatment than microorganisms and protozoa.

Lime stabilization

The utilization of animals manure and soil mixture lime stabilization before land application, for diminish pathogens microorganisms and other dangers microbes. The biggest benefits of lime this is very less in cost, and easy disposal for treating slurry, and diminishment in soil fermentation. In any case, there may be some additional amount to consider such as work to blend and pull the lime. Stored manure are very powerful for removing the microorganisms, mainly chemical operations of manure are not effective feasible for cattle producers from little to moderate size. Only the Lime stabilization chemical operations can be perfect for implement effective little to moderate size of farms. However, bigger producers may find chemical operations such as ozone that is attractive, effective and alternative to recent manure fertilization process.

Physical Method

Warmth treatment such as pasteurization has been noticed to be an effective process to annihilate enteric microorganisms to an acceptable level of hygienic dangers. Warmth treatment with a pasteurization apparatus has been observed to be effective against numerous infections this apparatus could be transportable; making it is very required during an epidemic outbreak to demolish pathogen microorganisms capably according to EU claims. Incineration is also done in some cases. In cattle breeding in western societies, this method is essentially conceivable with generally dry manure. Since burning devastates all the nitrogen and natural issue, it ought to be done just as the last option, since rather than different techniques this does not generate a product that could be used as a useful fertilizer and improving the soil humus content. Other physical methods for the treatment of manure with soil are radiation could theoretically be considered. Nonetheless, because of the high capital and operation costs, these types of apparatus are not in use and they are not described here.

Table 1: Benefits and drawbacks of different manure operations process

Operations	System restrictions	Charges	Practical restrictions of manure	Products
Biological operation	Better if temperature increases up to 600 C	Capital costs low. worker charges rather high	Fits greatest for compost manure, no warming are necessary	Compost for soil developing and manure fertilizer
Physical operation	Temperature of 30–40^0 C Should be reach. The 60–70^0 C may be possible	Amount of Capital rather short, electricity required	Fits for mixing and food production byproducts	Enhanced slurry for fertilization some possible heat, if done at high temperature
Chemical operation	Good at 70^0 C	Amount of Capital are low, and amount of operation are high.	The limitations are required for mixture of dung and compost manure.	Fertilizer

Conclusion

From the narratives of the broadened treatment choices exhibited here in, it is to some point evident that the pathogenic microscopic organisms population of public health and ecological hugeness should be controlled by these strategies depending upon the plausibility and monetary In this paper, each farm has a privilege of decision in the matter of what strategy to taking over the quantity of the animals, number of cattle manure generated, size of the storage facility and also the financial related capability of managing a specific technique for control. Nevertheless, we can deduct from literature that all methods are very good for the control of bacterial as well as viruses and protozoan pathogens in cattle manure and if the microorganisms will remove from the environment so it is good for the human's health.

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