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Environmental Enrichment in Cattle

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INTRODUCTION

Globally, dairy farming is shifting to an intensive production model that hinders the expression of animals' natural behaviours. Dairy cows raised for high yields frequently experience production stress. Animals become stressed due to the atmosphere in milking barns and the experience of being handled roughly by milkers while being milked. Animals are reluctant to enter milking barns because of the unpleasant experiences they've had in milking parlours. Cattle become more active and have higher heart rates when they hear people shouting and metal objects crashing. Dairy cows exhibit decreased milk output in conditions of increasing stress. Chronic stress and worry are not desired, both from an ethical and physiological standpoint. In addition to acute consequences, stress in animals can have long-term repercussions on their biology that can last generations. Oxytocin, a crucial hormone involved in the secretion of milk in animals, may be inhibited by stress. Thus, the addition of enriching amendments could result in a significant improvement in an animal's physiology in environments that are prone to stress. Environment enrichment also helps animals cope with stressors in their environment, reduce frustration, boost the fulfilment of behavioural demands, and encourage more positive emotional states. Therefore, effective environmental management is crucial to optimising business success as well as the comfort and health of animals.

Environment enrichment is a method for enhancing an animal's biological performance by changing its surroundings. Instead of defining the expected outcomes of these adjustments, it improves an animal's physical and social habitat by including one or more objects in its enclosure. Enhancing the animal's biological functioning should be the goal of enrichment.

BENEFITS

- To highlight the practicality and adaptability of behaviour in particular situations.
- To improve social connections in animals living in stressful environments
- To decrease undesired and deviant behaviour
- Used to improve the surroundings of study animals and prevent boredom in animals with simple physical environments.

Animals of many different species are affected physiologically and behaviorally in a number of ways by environmental enrichment. It might lessen abnormal behaviours' frequency or intensity or perhaps stop them from starting in the first place.

OBJECTIVES OF THE ENRICHMENT PROGRAMME

The goal of environmental enrichment is to improve arid environments by creating habitats that support species-specific behavioural patterns, this involves:

- Increasing the animal's capacity to deal with behavioural and physiological challenges like exposure to humans, experimental manipulation, or environmental variation.
- Preventing the development of abnormal behaviours or reducing their frequency or severity.
- Increasing the animal's positive use of the environment (for example, use of space).
- In addition to the aforementioned, an important aspect of enrichment

programmes is the observation of animal behaviour, health, and performance.

TYPES OF ENRICHMENT

1. Social enrichment can be achieved by direct or indirect (visual, olfactory, or auditory) interactions with conspecifics (other members of the same species) or people.
2. Occupational enrichment, which includes both enrichment that promotes physical activity and psychological enrichment (for instance, tools that give animals control or challenges).
3. Physical enrichment, which might entail modifying the size or complexity of the animal's enclosure or including extras like objects, substrate, or long-lasting structures (like nestboxes) in the enclosure.
4. Sensory enrichment, or stimuli that are auditory (music, vocalisations), visual (television, for example), or in other modalities (olfaction, touch, taste, etc.).
5. Nutritional enrichment, which can change the way food is delivered or provide various or novel food varieties.

IMPROVEMENTS TO THE ENVIRONMENT IN CATTLE SHED

The majority of cattle enrichment studies concentrate on the animals' grooming behaviour since encouraging grooming as a natural behaviour may reduce stress and boredom in intensive livestock production, which may improve the welfare of the animals.

In the meantime, the provision of a brush in dairy cow barns is common. Dairy cows use a motorised brush more frequently to clean their necks, backs, and tails, which helps them to fulfil their innate grooming behaviour. Commercial mechanical brushes typically come in two primary categories. Either they rotate or they are fixed. The region being considered determines the preferred sort of brush.

IMPLICATIONS OF ENVIRONMENT ENRICHMENT

Social aggregation: For gregarious animals, the group is a crucial source of information. Animals' psychological and physical health are positively affected both immediately and over time by a positive social environment. Group living increases rumination time, enhances feed intake, and lessens fear reactivity. Relationship stability reduces social tension and conflict. The ideal group size and stocking density should be taken into account since they reduce agonistic encounters between animals.

Lying space: Health of dairy cattle is connected to lameness and skin lesions, which are markers of animal wellbeing. High producing animals need more rest (12–14 hours), which is related to the lying area that is supplied for them. In order to ruminate, cows spend the majority of their time lying down. Offering comfortable litter, such as straw, encourages lying down, which is a sign of rest and is directly tied to production.

Grooming tools: Cattle stress and boredom can be reduced by encouraging grooming. Devices that scratch or rub simulate an animal's natural behaviour and help to improve coat quality. It also aids in lowering itching-related discomfort behaviours. When a mechanical brush is available, the amount of grooming in loose-housed cattle increases.

Environmentally friendly gadgets: The usage of EEDs can make it easier for cattle to enter a feedlot and can have an impact on how much weight they gain. The use of these is based on the proportion of animals in pens and the sort of enrichment tool being utilised. Toys consisting of plastic hose tubing, tyre fragments or chains can promote play and activity while reducing undesirable behaviour patterns.

Exercise: Dairy animals can access body parts that are restricted when restrained while exercising. Daily activity helps animals stay healthier, suffer fewer hock injuries, and need less veterinary care.

Music: A dairy animal may be stressed out by the noise. Dairy cattle require a quieter environment since they are more sensitive to sound. A variety of acoustic elements, including the human voice and other musical genres, are combined in radio stimulation, which helps dairy cows produce more milk. Additionally, music can be used as a signal to time attendance at an automated milking machine.

Pastures: Access to meadows promotes social grooming, appropriate exercise, increased eating of roughage, and reduces stereotypical cow

behaviour like tongue rolling. Additionally, it lowers the likelihood of mastitis and improves the expression of sexual behaviour in dairy animals.

Blocks of salt or minerals: Proof that salt or mineral licks can be used for play as well as meeting nutritional needs is provided.

Shower or sprinkler: This kind of habitat enrichment, especially during the summer, can help to promote dairy cow wellbeing by giving them a behavioural opportunity to naturally alleviate stress.

Human contact: The physiology, temperament, health, and production of farm animals may change in a beneficial way when they have regular, pleasurable interactions with people. On the other hand, animals that experienced unpleasant human interaction had a great dread of humans and their ability to grow and reproduce could be affected. Farm animals are especially vulnerable to early-life human stimuli since many of their systems are still growing. This might alter their genetic potential and have long-lasting effects. Keeping up routines and acting with confidence may assist to lessen signs of apprehension, resistance, or distress. Appropriate and gentle contact (such as patting the neck or other body regions frequently stroked by other cattle) with humans can enhance human-animal interactions and lessen animals' fear of people.

CONSIDERATIONS IN GENERAL

Due to genetic variations between breeds, lines, or strains, etc., different enrichment methods may have varied effects on different animals. Thus, the following factors should be taken into account when creating an enrichment device.

- Animals shouldn't be injured by facility design, and it should be simple to keep clean and produced with non-toxic materials.
- Should not be broken or disassembled by the animal, and if it does, the pieces or individual components should pose a danger to people.
- Economically viable.
- Specific to species.
- Time needed to maintain the enrichment programme should also be taken into account.
- Ease of management

CONCLUSION

Dairy cows and calves kept indoors face a variety of difficulties, including being forced to spend extended amounts of time with only a small selection of behavioural patterns and being kept in unusual social groups. Environmental enrichment techniques that attempt to help cattle deal with environmental stressors more effectively, avoid frustration, and promote the satisfaction of behavioural demands. The welfare of animals may be improved through enrichment techniques that address other crucial behavioural demands. Since animal welfare is defined as more than the absence of stress and harm, it also includes the development of improved affective conditions and the use of cognitive enrichment that might result in happy emotions. The use of enrichment programmes can assist dairy animals better manage environmental stressors and promote the satisfaction of their behavioural demands. Because of its physiological and behavioural consequences, abnormal behaviours may occur less frequently or with less severity.

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