

Entrance to the stall-feeding unit of Mr. Hemlal Chettri (karma Wangdi)

# Stall-Feeding of Dairy Cows (不丹)

Tsa Chhag Jin Tey Nor So Chong (इ.कवा ट्वीव के व्हेर् वॉर पर्श क्लेंटा)

Stall-feeding is an improved cattle production system, which is increasingly being adopted with a growing population of high yielding exotic dairy breeds. Thus, most improved dairy cattle in Nepal are being reared under confinement with limited access to grazing, as it allows for easy and optimal supplementation of fodder.

Stall-feeding, or "zero-grazing", is a livestock management approach that confines animals within stalls or pens for feeding. It offers various advantages, such as improved waste management, precise nutrition control, and reduced risk of overgrazing. It allows farmers to carefully regulate their animals' diets to ensure they receive the necessary nutrition for optimal growth and productivity (Hadush, 2002). To effectively implement stall-feeding, several key components are required. Firstly, animals must be housed in separate stalls of appropriate size to facilitate cleaning and waste collection. Secondly, a well-planned feeding system is essential, which may involve the use of automatic feeding equipment, or alternatively manual distribution of hay, grains, and supplements tailored to each breed's unique nutritional needs. Thirdly, a comprehensive waste management system is crucial to handle the manure produced by confined animals, which involves thorough stall cleaning and composting, transforming waste into organic fertilizer. Proper water supply and ventilation are also imperative for the animals' health and well-being. Adhering to these technical requirements (Garber, 2010) ensures optimal productivity and animal welfare in the stallrequirements (Garber, 2010) ensures optimal productivity and animal welfare in the stallfeeding system.

requirements (Garber, 2010) ensures optimal productivity and animal welfare in the stall-feeding system.

Stall-feeding is employed in various agricultural contexts worldwide, particularly where traditional open grazing is impractical or unsustainable. It is applied in areas with limited grazing land and high population density, such as urban and peri-urban settings. Moreover, it may be used in arid or semi-arid regions with scarce natural pastures, as well as during dry seasons when grazing resources are scarce. Smallholder farms and intensive livestock production systems aim to maximize output while optimizing resource usage, making stall feeding a prevalent practice. Dairy farming employs stall-feeding to boost milk production and enhance the quality of dairy products (Oosting et al., 2021).

According to Sahoo et al. (2015), the primary objective of stall-feeding is to provide controlled and ideal conditions for managing and feeding cattle. This approach ensures that animals are housed indoors according to their age, sex, breed, and weight, preventing them from grazing outdoors. To establish a well-functioning system, several crucial steps must be taken. First and foremost is the construction of individual stalls or pens, with careful consideration of size and design to accommodate different animals comfortably. The implementation of a reliable and well-planned feeding strategy is equally crucial. Adequate water supply and optimal ventilation within the stalls are also vital considerations (Van Eerdenburg & Ruud, 2021).

One of the primary advantages of stall feeding is its ability to provide animals with controlled and balanced nutrition, resulting in improved growth rates and higher-quality products like milk or meat. It also aids in disease prevention and mitigates the environmental impact of overgrazing. However, the main drawback lies in the additional effort and expense associated with feeding, cleaning, and waste management. Improperly managed confinement can limit animals' freedom of movement, poten



地点: Arekha, Darla,, Chukha, 不丹

分析的技术场所数量: [	-0	0
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Cattle shed with stall-feeding by Mr. Hemlal Chettri (karma Wangdi)



Jersey cows inside stall-feeding shed (Tshering Zangmo)

### 主要目的



### 土地利用



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## 供水



# 土地退化相关的目的



# 解决的退化问题



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**生物性退化** - Bc 0 0 0 0 0

### SLM组

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### SLM措施

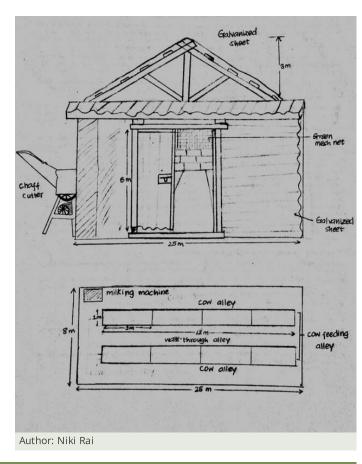


结构措施 - S91 



管理措施 - M10 о о о, M120 ооо 0700 оо ДМЗШ 

### 技术规范



## 投入和成本的计算

• 0 0 0 0 0 1 1 0 0 1 (00 1/Stall-feed unit volume, length: approx 3500 metres squared (Stall-Feeding unit))

## 影响成本的最重要因素

Lack of materials and procurement of materials is expensive

### 技术建立活动

- 4. Construction of individual stalls with proper size and design to comfortably accommodate the cattles (I 👚 🗷 🗎 winter)
- 5. Set up a dependable and well thought feeding strategy (  $\ \ \, \mathbb{I}$   $\ \ \, \mathbb{I}$  winter)
- 7. Installation of proper ventilation for cattles (  $\square$   $\square$   $\square$  winter)
- 8. Installing of water pumps to clean the areas (1  $\,$   $\,$  II  $\,$   $\,$  I winter)
- 9. Installing of miliking machine and chaff cutter (1 🛮 🗷 🐧 winter)

### 技术建立的投入和成本 (per Stall-feed unit)

对投入进行具体说明	单位	数量	单位成本 (Ngultrum)	每项投入的总 成本 (Ngultrum)	土地使用者承担的成本%
劳动力	•				
labor	per head	150.0	500.0	75000.0	100.0
设备					
Spade	numbers	10.0	300.0	3000.0	
Crowbar	numbers	10.0	500.0	5000.0	
施工材料	•				
Cement	bags	50.0	390.0	19500.0	100.0
CGI sheet	number	117.0	750.0	87750.0	100.0
iron rod	piece	14.0	600.0	8400.0	100.0
Bricks	piece	1000.0	7.0	7000.0	100.0
Stones	trucks	16.0	6700.0	107200.0	100.0
Wood	CFT	250.0	450.0	112500.0	100.0
其它	•				
Cattle	numbers	8.0	75000.0	600000.0	100.0
Chaff cutter	number	1.0	50000.0	50000.0	100.0
milking machine	number	1.0	35350.0	35350.0	100.0

٧	water pump					number	1.0	8000.0	8000.0	100.0						
书	技术建立所需总成本										1'118'700.0					
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### 技术维护活动

1. Floor cracking repair ( December, 2020)

### 技术维护的投入和成本 (per Stall-feed unit)

对投入进行具体说明	单位	数量	单位成本 (Ngultrum)	每项投入的总 成本 (Ngultrum)	土地使用者承担的成本%
劳动力					
Helper	per head	30.0	500.0	15000.0	100.0
施工材料					
cement	bags	8.0	390.0	3120.0	100.0
技术维护所需总成本				18'120.0	
				226.5	

### 年平均降雨量 农业气候带 关于气候的规范 < 2500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 ✓ I I I rainy in monsoon season. (may- August) ☐ ☐ ☐ National center for hydrology and metrology 751-1,0000 humid subtropical agro climatic zone. Elevation range from 500 to 1000 m 2,001-3,000 3,001-4,000 > 4,000 斜坡 地形 海拔 .....应用的技术 0-100 m a.s.l. 0-2% ZO O V 0 0 □ 3-5%□ 101-500 m a.s.l. 7 不□ □ 0 6-10%0 ✓ 501-1,000 m a.s.l. 0 110-15%0 1,001-1,500 m a.s.l. I 16-30%I 1,501-2,000 m a.s.l. 0 0 310-60%0 0 0 0 >60%00 2,001-2,500 m a.s.l. 2.501-3.000 m a.s.l. 3,001-4,000 m a.s.l. > 4,000 m a.s.l. 土壤深度 土壤质地 (表土) 土壤质地 (地表以下>20厘米) 表土有机质含量 0 0 0-200 0 0 21-500 0 0 □ №3%□ 中 1-3% □ №1%0





## 生态影响

## 场外影响

If he can expand the farm he seeslong term benefits to access to market

### ח ח ח ח

# 采用该技术的地区内土地使用者的百分比

1-10% 11-50% > 50% 在所有采用这种技术的人当中,有多少人在没有获得物质奖励的情况下 采用了这种技术? ■ 0-10%

✓ **0-10%** 11-50% 51-90% 91-100%

### 最近是否对该技术进行了修改以适应不断变化的条件?

✓ I

### 什么样的变化条件?

Stalls designed: to ensure proper ventilation and drainage to maintain optimal living conditions for the animals. Cemented the flooring of the shed. Feed Management: The availability and affordability of feed ingredients in Bhutan which influence the composition of the diet provided to dairy cattle. Local feed resources such as grasses, legumes, crop residues, and agro-industrial by-products utilized efficiently.

### 长处: 土地使用者的观点

- Employment opportunities (Farm attendant)
- Income generation
- Community service

### 长处: 编制者或其他关键资源人员的观点

- Ease management ensures that the animals to be kept inside the shed or house as per their age, sex, weight and breed.
- ensures to keep away the animals from grazing outside.
- Proper care, appropriate feeds for better growth of the cattle and production

### 弱点/缺点/风险: 土地使用者的观点如何克服

• Diseases of animals Proper management

### 弱点/缺点/风险: 编制者或其他关键资源人员的观点如何克服

High investment Land support from government and other projects Subsidy support

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## 资源人

Hemlal Chettri - 🛭 🔻

### WOCAT数据库中的完整描述

https://qcat.wocat.net/zh/wocat/technologies/view/technologies\_6869/

### 链接的SLM数据

不□

## 文件编制者

不□

> Strengthening national-level institutional and professional capacities of country Parties towards enhanced UNCCD monitoring and reporting - GEF 7 EA Umbrella II (GEF 7 UNCCD Enabling Activities\_Umbrella II)

### 主要参考文献

- Does it pay to switch from free grazing to stall feeding, Hadush, M, 2021.: Website
- Farmed animal production in tropical circular food systems, Oosting, S., van der Lee, J., Verdegem, M., de Vries, M., Vernooij, A., Bonilla-Cedrez, C., & Kabir, K, 2021: website
- Stall Feeding in Small Ruminants, Sahoo, A., Bhatt, R. S., & Tripathi, M. K, 2015: website
- Design of Free Stalls for Dairy Herds, Van Eerdenburg, F. J. C. M., & Ruud, L. E., 2021: website

### 链接到网络上可用的相关信息

Guide for the Care and Use of Laboratory Animals, Garber Janet C, 2010: https://grants.nih.gov/grants/olaw/guide-for-the-care-and-use-oflaboratory-animals.pdf

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