iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.53027

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

Hoof Trimming as a Major Issue in Cattle Farming… Indian Scenario

Divyam Sudhakar Chaudhari[1], Sarvesh Rajendra Jadhav[2], Kalpesh Suresh Late[3], Abhishek Santosh Lohokare[4], Sandip Subhashrao Patil[5]
[1, 2, 3, 4, 5]*Mechanical Engineering Department, Savitribai Phule Pune University*

Abstract: ***India has the largest number for cattle farming about 302.79 million, and as the part of managing the cattle health Hoof cutting is the major issue when it comes to taking care of cattle. Improper cutting of hoof can lead to harm to the cattle and it may sometimes turn into severe disease, in this case cattle may be prone to lameness. The cutting of hoof is done by traditional way by using tools like chisel, grinder, pincer etc. these tools have their own specific applications, but still it is used to cut hoofs, It is observed that there is no specific tool for cutting hoof of cattle and available tools not having tool Replacement. In literature review, researcher also neglected the issue and it is rarely found the development of new special tool for hoof cutting. So there is scope of working on this tool. Under this project activity, the designed and developed portable hand operated hoof cutter, new developed tool has the various blade settings adjustment which increase versatility of cutter, and it can cut 4", 6", and 8" length of hoof by using this cutter. The new developed cutter has 30% more efficiency compared to all the traditional cutting methods. This Project presents the design and fabrication of a hoof cutter for cattle. New Developed hoof cutter is designed to be efficient, safe, and user-friendly. The hoof cutter is fabricated using readily available materials that are easy to source and assemble. The tool is portable and easy to use, making it ideal for use in the field by farmers and veterinarians. The hoof cutter is tested to evaluate its efficiency and safety. The results showed that the hoof cutter is both efficient and safe to use.***
Keywords: Cattle, Hoof, Cutter, Blade Attachment, Fabrication

I. INTRODUCTION

Cattle hoof cutting is the process of trimming and maintaining the hooves of cattle to promote their overall health and well-being. Hoof trimming is an important aspect of cattle management, as it helps prevent lameness, reduces the risk of injury, and improves the animal's mobility and productivity. It involves removing excess hoof material, reshaping the hooves, and addressing any issues such as cracks or infections. Proper hoof care is essential for the long-term health and productivity of cattle, and should be performed regularly by trained professionals. Mainly tools like grinder machine, chisel, etc. are used for trimming, these all tools have their own specialized application. And by using this methods for trimming there could be the chances of accidents and cattle can be harmed, sometimes this can lead to the disease where the cattle could face lameness to tackle with this situation we came to an idea about the specific tool. Basically, This Project is based on the cutting or trimming of the cattle. This project will be specially focused on uniform and safe cutting of cattle. The arrangement of various mechanical linkages and gear will ensure proper cutting or trimming of hoofs. This project has wide scope for common people especially for farmers who own cattle.

Designing and fabricating a hoof cutter for cattle can be a great way to ensure that one has a tool tailored to their particular needs at a lower cost. The design and fabricating process involves choosing the appropriate materials and tools, crafting a functioning prototype, testing the prototype and making modifications if necessary, and finally creating a finished product that is effective and durable.

II. PROBLEM STATEMENT

1) Improper cutting of cattle of by using traditional tools
2) Injuries to cattle's hoof by wrong trimming method
3) No specific dedicated tool available for cattle hoof cutting

III. OBJECTIVES

1) To analyse the problem associated with hoof trimming.
2) To design portable hoof cutter with tool replacement.
3) To develop portable cutter for cattle hoof.

©IJRASET: All Rights are Reserved

4) To analyse test results of new developed hoof cutting tool.
5) To compare the results of new cutter with traditional methods.

IV. ON FIELD SURVEY

To identify the main root cause of problem we decided to performed the on-field survey for the analysis of hoof cutting methods. Where we approached the common people associated with cattle farming like Farmers, Cattle owners, Dairy owners, Veternariy Doctors etc.

A. Survey Form

Name: _____
Contact No.:_____ Occupation: _____

1) Is there any need of hoof cutting tool?
Yes / No
2) What do you use for cutting hoof?
_____
3) Is Specific or dedicated tool is available?
_____
4) Does this cutting harms the cattle?
Yes / No
5) Does traditional tool is safe to use? On the scale of 10, what do you think about safety of cattles?
Yes / No (____ / 10)
6) How frequently do you use cutting tool?
_____
7) Is there any tool replacement?
Yes / No
8) Do you think dedicated tool should be available for cutting?
Yes / No

Remark/Suggestions: _____
Signature: _____

B. Data Collection for Analysis

TABLE I
DATA COLLECTION FOR ANALYSIS

Survey from	Quantity	Opinion Poll	Q1	Q2	Q3	Q4	Q5
Farmers	17	Yes	17	0	1	0	17
		No	0	17	16	17	0
Dairy Owners	13	Yes	13	3	2	0	13
		No	0	10	11	13	0
Cattle Owners	27	Yes	27	0	2	0	27
		No	0	27	25	27	0
Veterinary Doctors	3	Yes	3	1	0	0	3
		No	0	2	3	3	0

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

C. Graphical Analysis of Survey

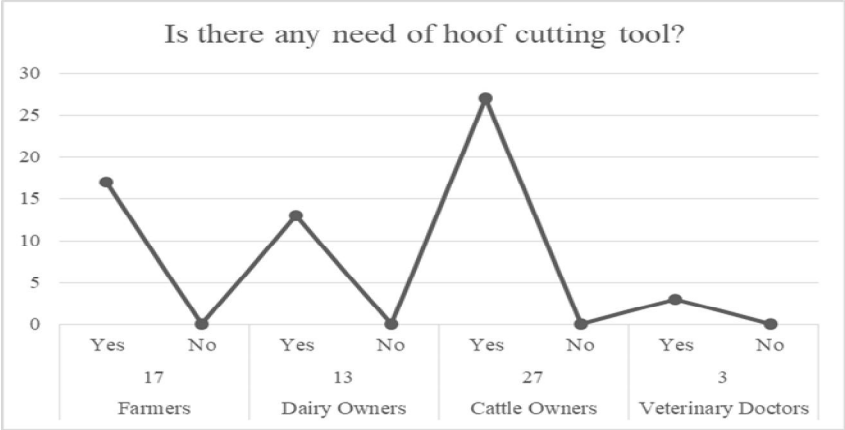


Fig 1. Graphical analysis of Survey (Q1)

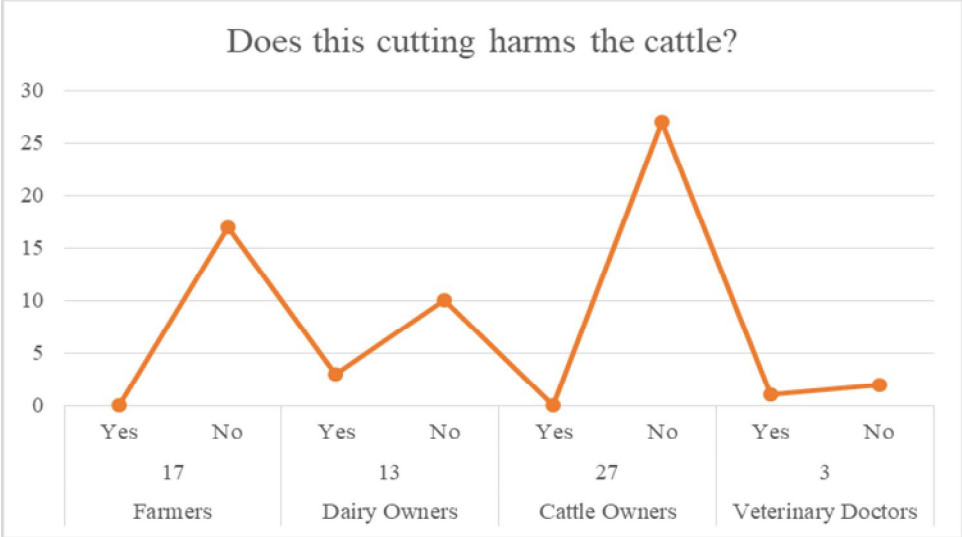


Fig 2. Graphical analysis of Survey (Q2)



Fig 3. Graphical analysis of Survey (Q3)

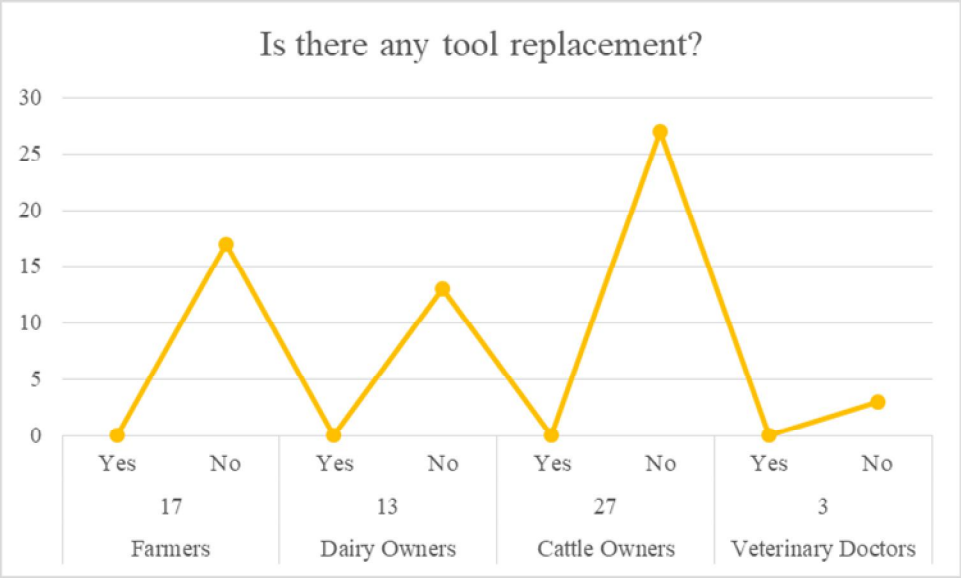


Fig 4. Graphical analysis of Survey (Q4)

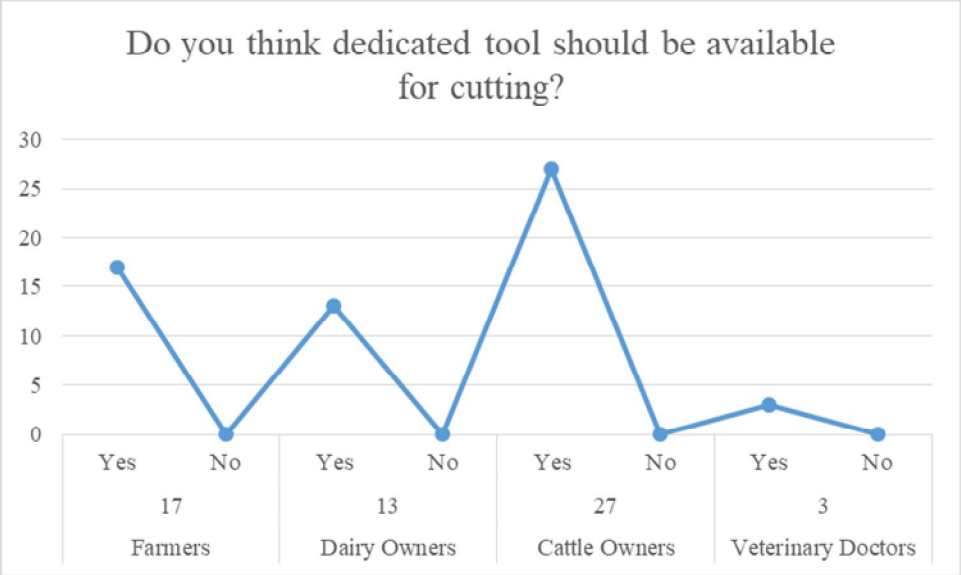


Fig 5. Graphical analysis of Survey (Q5)

V. MODEL OF HOOF CUTTER

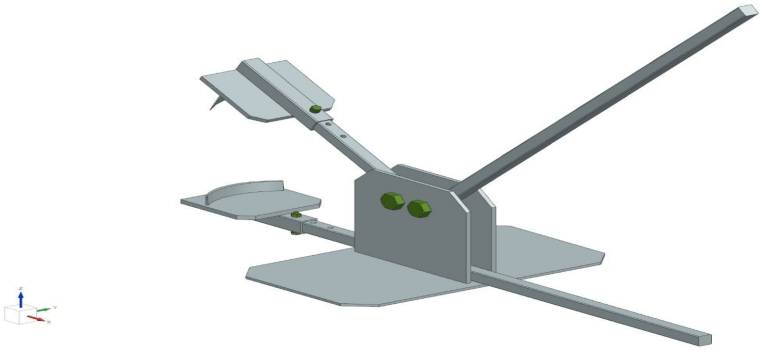


Fig 6. Hoof Cutter Assembly Isometric View



Fig 7. Developed Model of Hoof Cutter

VI. CONCLUSIONS

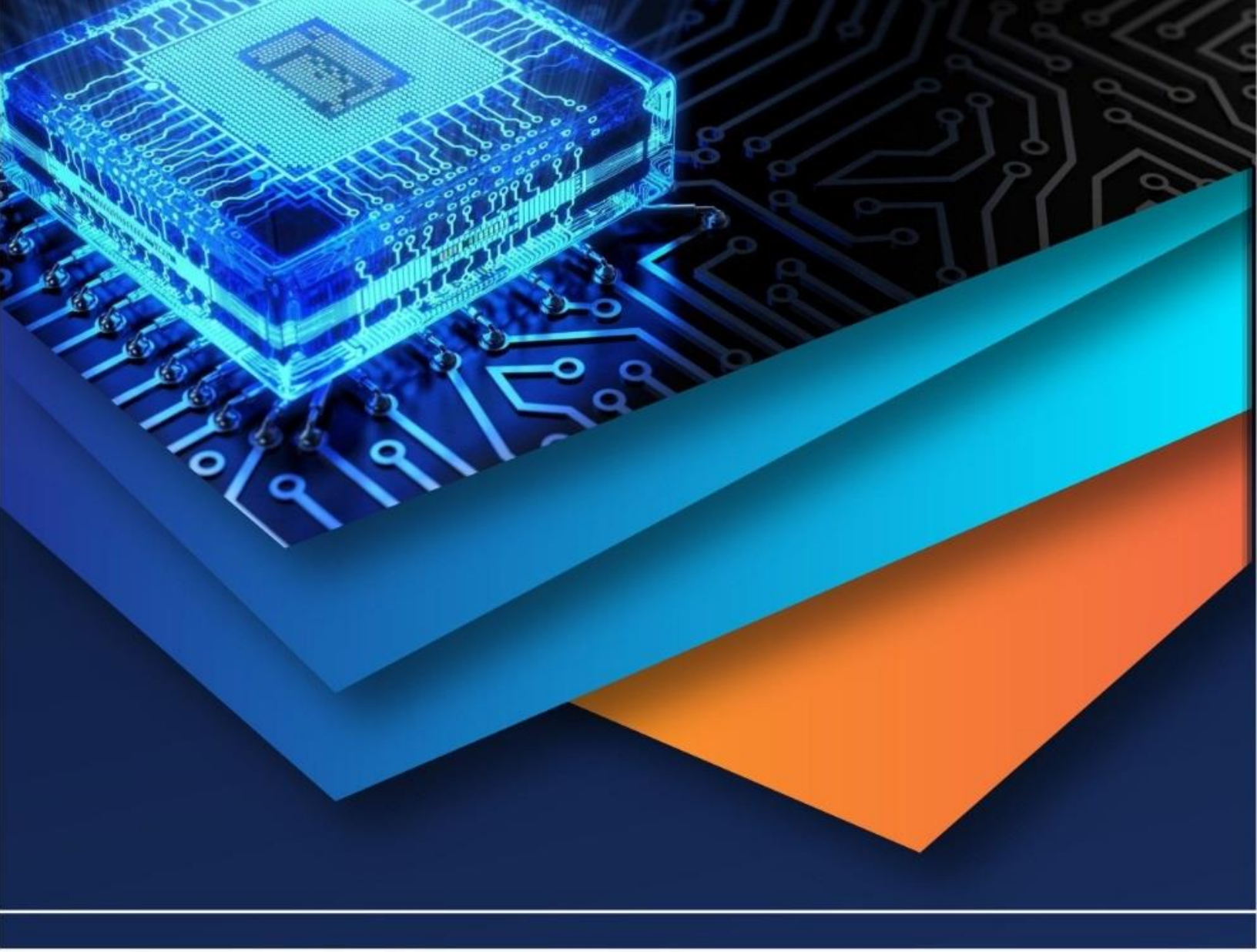
The design and fabrication of a reliable, efficient, and safe hoof cutter for cattle is a significant achievement that will contribute to the maintenance of animal health and welfare. The hoof cutter is easy to use, portable, and can be used by farmers and veterinarians with little training. The use of a protective cover around the blade ensures the safety of both the operator and the animal. The hoof cutter offers a viable alternative to traditional hoof trimming methods and provides a more efficient and safe way to trim hooves of cattle. The efficiency of hoof cutting is increased by 30%. We can use various blade settings irrespective of length of hoofs. The safety of hoof cutting is increased by 70-80%. There could be more reduction in overall cost if cutter is manufactured on a large scale. This cutter is the only cutter in market which is cost effective, easy to operate and the main thing is this is the most versatile cutter as it comes with various blade settings.

VII. ACKNOWLEDGMENT

Authors wish to thank Dr. N. G. Nikam, Prinicipal Guru Gobind Singh College of Engineering & Research Center, Nashik for his encouragement during project work. Authors would like to express our sincere thanks and appreciation to Dr. C. D.
Mohod (HOD) for his valuable support. Authors are very much thankful to respected guide Mr. S. S. Patil and project coordinator Mr. K. R. Pagar for leading guidance in this project work.

REFERENCES

[1] Khaled Hamdy, “Materials, Properties, manufacturing methods and cutting performance of innovative ceramic cutting tools”, April 2019.
[2] Martin Kummer, “The effect of hoof trimming on radiographic measurements of the front feet of normal Warmblood horses”, 2005.
[3] E. M. Wynands, “Dairy farmer, hoof trimmer, and veterinarian perceptions of barriers and roles in lameness management”, July 2021.
[4] Maryam Tarik Hamad, “Development of a Profile Sample Cutter”, Sept. 2020.
[5] Anup Kumar Dey, “Cutting Tools: Types and Characteristic of Material”, December 2019.
[6] Aashay Sharad Ingle, “Design and Manufacturing of Nail Cutter Body Die”, October 2021.
[7] J. Bailey1, “Cutting Tool Design Knowledge Capture”, January 2001.
[8] Ifeanyieze F. O. “Hoof trimming for effective health management: What cattle farmers need to know”, April 2016.
[9] A. García-Muñoz, “Effect of hoof trimmer intervention in moderately lame cows on lameness progression and milk yield”, July 2017.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)