

Increase in Milk Yield and Weight of Bovines by using MozziQuit Mosquito Trap Device in Cow Sheds- Evaluation on Control of Mosquitoes and other Nematoceran Insects

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Abstract

All warm blooded vertebrates are affected. In large populations Mosquitoes cause irritation and extensive blood loss to livestock resulting in anemia, reduced productivity of milk and sometimes even death. Mosquitoes are a great nuisance and their bites do cause painful reactions making cows panic. They also play an important role as intermediate hosts and as vectors in several important parasitic and viral diseases of domestic animals and man viz., filariasis, Canine heart worm disease, Malaria, dengue, chikungunya, equine viral encephalitis etc. The Author and the Managing Director of Leowin Solutions Pvt. Ltd. is the Innovator of MozziQuit mosquito trap device priced Rs. 1,800/- per unit inclusive of 18% GST which attracts, traps and kills female mosquitoes every day in large numbers at lowest operating cost of less than 10 paise per day without use of any chemicals or consumables or emission of any UV Radiation very safe for use in cow sheds (www.mozziquit.com). MozziQuit device was evaluated to find the possibility of its use for providing relief to cows and animals in live farms. The study was carried out by Dr. Placid E. D'Souza, Professor & Head, Dept of Veterinary Parasitology as well as by Staff from constituent Veterinary Colleges of Karnataka Veterinary, Animal & Fisheries Sciences University of Bidar Dr. H. Dhanalakshmi, Dr. B. S. Pradeep, Dr. G. S. Mamatha and Assistant Professors under instructions from Dr. H.R.V. Reddy, Director of Research of KVAFSU of Bidar. The study reveals relief to workers in cow shed from mosquito bites besides increase in Milk Yield as well as increase in Weight of Bovines after using MozziQuit in cow shed as the cows get maximum relief by trapping and killing of biting mosquitoes by MozziQuit device everyday.

Keywords:

Milk yield; Cows; Animal farms; Mozzi Quit; Leowin; Mosquito trap; Mosquito; Malaria; Dengue; Zika virus; Filaria; Chikun gunya; Yellow fever; Japanese encephalitis; Mosquito menace; Mosquito bites; Mosquito free world

Introduction

Mosquitoes are of major Veterinary and Medical importance due to their role as Vector for transmission of various parasitic, bacterial and viral diseases. Mosquitoes are distributed throughout the world. They are found at altitudes of over ~4700 m as well as in mines ~1250 m below sea level. Besides a worldwide distribution they are in general predominantly tropical pest. Mosquitoes usually travel a few hundred meters from their emergence sites. Generally, it is assumed that they do not fly further than 2km, but have been recorded to be dispersed 100 km or more, through wind [1].

Mosquitoes feed on fruit juices and sugar water and male Mosquitoes normally exist on such food, but the females are blood suckers and require a meal of blood in order to lay eggs. The females seem to be attracted by the warmth radiating from the skin of their host either people or animals. They are active at night and are attracted mainly by carbon dioxide emitted by their host, while during the day they hide in areas of darkness, behind hanged cloth or lofts or shoe racks etc.

The integrated pest management plays an important role in controlling larval and adult habitats. Management mainly involves altering water bodies in order to reduce sources for larval

Received: January 25, 2021; Accepted: February 10, 2021; Published: February 17, 2021

Citation: Noronha OI, Reddy HRV, D'Souza PE, Dhanalakshmi H, Pradeep BS (2021) Cause for the Occurrence of Freemartin and its Influence on Livestock Reproductive Performance: A review. J Anim Health Behav Sci 5: 106.

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development and egg laying. Biological control can be accomplished with the assistance of mosquito fish *Gambusia affinis* which feed on mosquito larvae but these methods have very less impact in Control of Mosquito population. Chemical control by use of insecticides is mostly employed but development of resistance and environmental pollution are a major issues of concern. Secondly, the application of larvicides must be repeated periodically during the breeding season, it is costly and requires personnel for application, supervision and also for evaluation. Cow owners use chemical based mosquito repellent coils and also burn coconut shells to spread smoke in cow shed to chase mosquitoes. In fact, Cows are more sensitive than people and they are in tied position inside cow shed as a result cow's kidney and liver get affected leading them to die earlier than their actual life span due to slow poison from chemical repellents and from the harmful smoke emitted by burning coconut shells. Hence, alternative methods to Control Mosquitoes like use of trapping and killing device like MozziQuit is very much needed.

In present study patented MozziQuit mosquito trap device developed by M/s Leowin Solutions Private Limited, Mangalore, Karnataka, India was evaluated on the effective performance of trapping of mosquito vectors in cow sheds, poultry farms and in live stock farms as well as the various benefits of using MozziQuit device [2].

Objectives

To study the efficacy of MozziQuit (MQ-MAX and MQ-MINI) to trap mosquitoes and other Nematoceran Insects in cow sheds, Livestock Farms and Farm Premises

To evaluate and validate MozziQuit (MQ-MAX and MQ-MINI) for Control of Mosquitoes and possibly other Nematoceran Flies

Practical utility of the investigation including economic implication likely to achieved through the use of MozziQuit device - The menace of Mosquitoes and other Nematoceran Insects of smaller size can be effectively checked. Since they are both Pests and Vectors, their eradication by MozziQuit can have a good impact on general health and indirectly improves the productivity of milk and weight [3].

Location

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Techniques to be Adopted for the Investigation in Brief

MozziQuit traps will be placed in different cow sheds and in few livestock farms.

MozziQuit traps will be monitored on daily basis.

The efficacy of the MozziQuit trap in mosquito and fly control will be evaluated.

Milk Yield and Weight of Cows to be monitored to check the difference post using MozziQuit in cow sheds [4].

Duration of the Investigation

6 months

Facilities Available

All the infrastructure facilities required for the evaluation/project & technical expertise is available in the department.

Background and Status of the Problem as related to the Proposed Study

Mosquitoes and Nematoceran Insects are very difficult to control in spite of a number of available methods being implemented, such as various insecticides/pesticides, barriers and repellents. Therefore novel approaches are highly essential.

Mosquitoes are everywhere. Female Mosquitoes bite people, animals and birds everyday again and again for blood meal required for their breeding. Female Mosquitoes lay 300 to 1000 eggs during their life span of 30 to 100 days depending upon the species as a result mosquito population multiply quickly in multi folds [5].

Practically it is not possible to restrict entry to female mosquitoes inside cow shed/animal farms and the density of mosquitoes is found is very huge. Cows are mostly tied up in cow sheds. Cow's precious energy is wasted by swinging their tail all around their body to chase biting mosquitoes. Mosquitoes get panic and restless as their tail cannot reach to their neck portion to chase biting mosquitoes as a result milk yield and weight of cows is reduced as they consume less feed [6]

Sir Ronald Ross, an Indian born British National was Awarded Nobel Prize in 1902 for his discovery that Malaria Parsite is been transmitted by Mosquitoes. Ref: http://www.nobelprize.org/nobel_prizes/medicine/laureates/1902/ross-facts.html. Since then Governments of all the countries with the assistance from WHO and World Bank are spending millions of amount every year for eradication of Mosquitoes under National Vector Borne Disease Control Programme besides conducting Malaria Awareness Programme. In spite of this initiative since 118 years, as of date still Mosquito population is increasing every year.

According to WHO Report About 3.4 billion people—Half of the World's Population—are at risk of malaria. Every 2 minutes, a child dies of malaria. And each year, more than 200 million new cases of the disease are reported. Although countries have dramatically reduced the total number of malaria cases and deaths since 2000, progress in recent years has stalled. Worryingly, in some countries, malaria is on the rise. In 2013, 97 countries had ongoing malaria transmission.

The incidence of dengue has grown dramatically around the world in recent decades. Over 2.5 billion people—over 40% of the world's population—are now at risk from dengue. The incidence of dengue

has grown dramatically around the world in recent decades. A vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under-reported. Many cases are also misdiagnosed as other febrile illnesses.

One modelling estimate indicates 390 million dengue virus infections per year (95% credible interval 284–528 million), of which 96 million (67–136 million) manifest clinically (with any severity of disease). Another study on the prevalence of dengue estimates that 3.9 billion people are at risk of infection with dengue viruses. Despite a risk of infection existing in 129 countries, 70% of the actual burden is in Asia. The number of dengue cases reported to WHO increased over 15 fold over the last two decades, from 505,430 cases in 2000 to over 2,400,138 in 2010 and 3,312,040 in 2015 [7].

Material/Product and Methods

Food Grade Powder Additives are added in the raw material of Polypropylene Plastic raw material while producing few of the plastic casing parts of MozziQuit device in Injection Molding Machine. Food Grade Powder Additives get dispersed all around within the said plastic parts by spreading everywhere 100% uniformly which remain forever intact in the said plastic parts beyond even 25 years. The light installed inside MozziQuit device in invisible mode without emitting any UV Radiation from the device releases luring effect with the combination of Food Grade Powder Additives dispersed everywhere in the said plastic casing parts. The Electronic Circuit Board (PCB) installed inside MozziQuit device to convert AC power to DC power generates required temperature (Figure 1) [8].



Figure 1: MozziQuit device in injection molding machine.

Female Mosquitoes originally from the nearest external breeding locations enter inside houses/rooms and cow sheds mostly between 5 pm to 7 pm by detecting the smell of Carbon Dioxide exhaled by their hosts i.e. people and cows to extract blood required for their breeding process get attracted to MozziQuit device by the luring effect and the temperature emitted by MozziQuit device and start flying all around the openings particularly the trapping zone of the MozziQuit device. The fan installed inside MozziQuit device forcibly sucks/vacuum all Mosquitoes which fly around the trapping zone to enter into the MozziQuit device making them to pass forcibly through the perforated plate having holes slightly bigger than size of mosquitoes provided above the removable collection container. All trapped mosquitoes get collected in the removable collection container partially injured while passing through the perforated holes which die subsequently in some time.

MozziQuit was kept at a height between 2 to 4 feet height from ground level in cattle, poultry, piggery farms and human dwellings at various institutions of Karnataka Veterinary Animal & Fisheries Sciences University. When this device MozziQuit was switched On most of the lights were switched off so that all the Mosquitoes present in the farms were attracted to MozziQuit. The MozziQuit was kept On

from evening 6 pm to next day morning till 6 am. The Mosquitoes which were attracted, killed and collected in the container were counted on daily basis to evaluate the trapping efficiency of MozziQuit in control of Mosquitoes and other Nematoceran Insects [9].

Summary of the Results/Findings and Discussion

The attracting, trapping and killing efficiency of MozziQuit was assessed during the period of May 2014 to October 2014.

During this period of study, a number of biting insects were attracted, trapped and killed by this device MozziQuit.

A large number of Mosquitoes were attracted, trapped and killed by MozziQuit along with the other harmful flies like Psychodida, moths, midges and Culiocoids.

Among Mosquitoes, maximum number of Culex species were attracted and killed followed by Aedes and Anopheles species which were found in the vicinity.

Maximum number of Mosquitoes were attracted, trapped and killed by MozziQuit device during the months of May and June. when the Mosquito population was high.

MozziQuit, an electrical device was found to be very effective in attracting, trapping and killing the maximum number of Mosquitoes in livestock farms. This indicates that all the farm animals and poultry birds are devoid of annoyance caused by the Mosquitoes and as Mosquito Population reduces there are less chances of transmission of other parasitic and viral diseases to animals and people. MozziQuit indirectly helps to increase milk yield in bovines and weight of cows as well as birds in poultry because of proper feeding, sleep and no nuisance or irritability or waste of energy to chase biting mosquitoes.

MozziQuit device is cost effective and eco-friendly, does not involve personnel for monitoring or supervision and also for evaluation. Daily operating cost claimed by the manufacturer is said to be at very lower level equivalent to 15 Watts for MQ-MAX and 3 Watts for MQ-MINI only for electricity consumption.

MozziQuit device attracts, traps and kills mosquitoes in large numbers every day at lowest operating cost of less than 10 paise per day without use of any chemicals or liquids or refills or consumables or smell or smoke or ash or emission of any UV Radiation and very safe to use in cow sheds, animal live stock farms, poultry and in houses [10].

More number of mosquitoes were attracted and trapped in MozziQuit device during the month of May and June compared to July and August. This variation could be probably due to the change in the environmental temperature. In later months, there was enough rain in Karnataka State were this device was assessed when the environmental temperature was reduced.

Author/Innovator claims to have already demonstrated trapping of more than 100 million (10 crore) mosquitoes by One MozziQuit mosquito trap device in 3 months period installed in the cow shed having 17 cows belong to Mr. Clement Lobo at Kenjar, Near Mangalore International Airport in Mangalore. Number of 100 million (10 crore) mosquitoes were measured by checking the weight of

counted 2000 dead mosquitoes in jeweler's weighing scale and by seeing the weight of dead mosquitoes filled in 10 PET JARs collected in 3 months by the cow owner. Dead mosquitoes in PET Jars do not rot instead they dry inside PET Jars (see video starting from 7 seconds to 59 seconds out of 6.54 minutes video) in <https://www.youtube.com/watch?v=BGFazFRDcwk&t=4s>

This trap named MozziQuit can be used for effective control of mosquitoes and related insects in all farms, cow sheds, residential areas and institutions with no side effects and economically viable as well with increase in production levels from farm animals. Presently available mosquito repellents in the market made out of chemicals do not kill mosquitoes. Repelled mosquitoes lay 300 to 1000 eggs at their external breeding location and multiply into multi folds making it difficult to control mosquito population. It is possible to reduce mosquito population by use of MozziQuit Mosquito Trap device as it eliminates further multiplication of mosquitoes by attracting, trapping and killing of female mosquitoes (Figure 2) [11].



Figure 2: MozziQuit MQ-MAX in cow shed.

Recognitions and Awards

Following Prestigious Recognitions and Awards at National and International level have been obtained by the Author for MozziQuit mosquito trap device:

Summary of the FINAL REPORT of the Field Evaluation Report on MozziQuit mosquito trap device carried out by ICMR-NIMR from Dr. Manju Rahi, Scientist F, ICMR issued with the approval of Director General of Indian Council of Medical Research, New Delhi

WHO has confirmed that MozziQuit is been considered for Prequalification Process under New Vector Control Tools

MozziQuit displayed in 14th Annual Meeting of Roll Back Malaria Partnership to End Malaria – Working Group for Vector Control held in Geneva, Switzerland on 30 January to 1 February 2019.

Recommendation and Conclusion

30% of India's present Agricultural GDP is from Dairy Industry. Increase in Milk Yield by using MozziQuit device in cow sheds will enable Women to earn more daily income who mostly work in cow sheds at the bottom of pyramid level. Increase in Milk Yield will also

enable all Milk Collection Unions as well as all Dairies to earn more income. Increase in Milk Yield as well as Increase in Weight of Cows will also enable to improve the GDP of every Nation.

Malaria, Dengue, Chikungunya, Lymphatic filariasis and Japanese encephalitis are the important mosquito borne diseases prevalent in India and pose an enormous burden to the public health system. An. stephensi is the vector for urban malaria, Cx. quinquefasciatus for lymphatic filariasis, Cx. tritaenorrhynchus for Japanese Encephalitis and Ae.aegypti and Ae. albopictus for ZIKA Virus/dengue/chikungunya. A higher number of mosquitoes and vector mosquitoes in MozziQuit traps were observed in the present study, recommending efficiency of this MozziQuit trap for use in houses, cow sheds, in animal farms, poultry farms, in cars, in volvo buses, aircrafts and at external mosquito breeding locations.

MozziQuit is a proven device to eliminate further multiplication of mosquito population/offsprings by attracting, trapping and killing of female mosquitoes in houses/cow sheds/external locations before they could lay thousands of eggs and multiply at their external breeding locations to enable eradication of all mosquito borne diseases in short span of time by implementing use of MozziQuit in every house, cow shed, poultry and at mosquito breeding locations under National Programmes in all 91 malaria infected countries already identified by World Health Organisation as well as through Ministry of Agriculture, Animal Husbandry and Ministry of Tourism.

Author is confident of his MISSION of Making India and the entire World Free of Mosquito Menace in short span of time achievable by using Innovative MozziQuit mosquito trap device in maximum houses, cow sheds, animal farms, buses, cars, aircrafts, street light poles and at external mosquito breeding locations with timely support from all people who have experienced free bites of female mosquitoes.

Acknowledgement

The Author thankfully acknowledges Dr. H.R.V. Reddy, Director of Research of Karnataka Veterinary, Animal & Fisheries Sciences University of Bidar, Dean of Veterinary College, Hebbal, Bangalore Dr. Placid E.D'Souza, Professor & Head, Dept of Veterinary Parasitology, Assistant Professors and Staff from constituent Veterinary Colleges of KVAFSU in Karnataka State Dr. H. Dhanalakshmi, Dr. B.S. Pradeep, Dr. G.S. Mamatha and all others including cow owners/animal farms who executed and monitored the entire process of the evaluation study of MozziQuit mosquito trap device.

Due acknowledgement is to the Vice Chancellor of Karnataka Veterinary, Animal & Fisheries Sciences University of Bidar who authorized Director of Research to carry out the study.

References

1. O'Loughlin J, Robitaille V, Boivin JF, Suissa S (1993) Incidence of and risk factors for falls and injurious falls among the community-dwelling elderly. *Am J Epidemiol* 137: 342-354.
2. National Center for Health Statistics (NCHS), National Vital Statistics System. Accessed from Centers for Disease Control and Prevention (CDC).

3. Siracuse JJ, Odell DD, Gondek SP, Odom SR, Kasper EM, et al. (2012) Health care and socioeconomic impact of falls in the elderly. *Am J Surg* 203: 335-338.
4. Afilalo J, Karunanathan S, Eisenberg MJ, Alexander KP, Bergman H (2009) Role of frailty in patients with cardiovascular disease. *Am J Cardiol* 103: 1616-1621.
5. Yeung SSY, Reijnierse EM, Pham VK, Trappenburg MC, Lim WK, et al. (2019) Sarcopenia and its association with falls and fractures in older adults: A systematic review and meta-analysis. *J Cachexia Sarcopenia Muscle* 10: 485-500.
6. Fülster S, Tacke M, Sandek A, Ebner N, Tschöpe C, et al. (2013) Muscle wasting in patients with chronic heart failure: Results from the studies investigating co-morbidities aggravating heart failure (SICA-HF). *Eur Heart J* 34:512-519.
7. Park JK, Deutz NEP, Cruthirds CL, Kirschner SK, Park H, et al. (2020) Risk factors for postural and functional balance impairment in patients with chronic obstructive pulmonary disease. *J Clin Med* 9: 609.
8. The Centers for Disease Control and Prevention (CDC). STEADI Algorithm for Fall Risk Screening, Assessment, and Intervention.
9. Hamel C, Hekmatjah N, Hakakian B, Banooni M, Lalezari J, et al. 2019. Evidence-Based Community Fall Prevention Programs at Senior Centers Near 10 US Academic Centers. *J Am Geriatr Soc* 67: 1484-1488.
10. Zijlstra GA, van Haastregt JC, Ambergen T, van Rossum E, van Eijk JT, et al. (2009) Effects of a multicomponent cognitive behavioral group intervention on fear of falling and activity avoidance in community-dwelling older adults: Results of a randomized controlled trial. *J Am Geriatr Soc* 57: 2020-2028.
11. Clemson L, Cumming RG, Kendig H, Swann M, Heard R, et al. (2004) The effectiveness of a community-based program for reducing the incidence of falls in the elderly: A randomized trial. *J Am Geriatr Soc* 52: 1487-1494.

How to cite this article: . "Increase in Milk Yield and Weight of Bovines by using MozziQuit Mosquito Trap Device in Cow Sheds-Evaluation on Control of Mosquitoes and other Nematoceran Insects." *J Anim Health Behav Sci* 5 (2021) : 106