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# DEVELOPMENT OF FAST AND BOUNCY CRICKET PITCHES IN SRI LANKA

W.S.U. Perera

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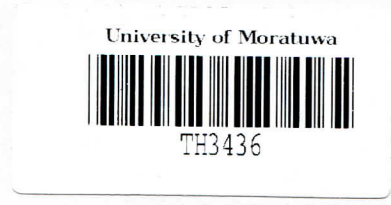
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# DEVELOPMENT OF FAST AND BOUNCY CRICKET PITCHES IN SRI LANKA

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158018X

The research thesis was submitted in partial fulfillment of the requirements for the  
Degree of Master of Science

Supervised by Dr. U.P. Nawagamuwa



Department of Civil Engineering

University of Moratuwa

Moratuwa

Sri Lanka

June, 2017

## DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Dr. U.P. Nawagamuwa



# ABSTRACT

## Development of Fast and Bouncy cricket pitches in Sri Lanka

Most cricket batsmen in Indian subcontinent face a great difficulty in batting against fast bowlers on English and Australian fast and bouncy cricket pitches. The lack of having such practice pitches in home is the main reason for their lack of performances in fast pitches. It had been discovered that the pace and bounce of a cricket pitch is governed by clay content, clay mineralogy, sand content, organic matter content and grass content of the top layer of a cricket pitch.

Six local soils and one soil from India were tested for their index properties as the preliminary step. The soils which were fulfilling the requirement of the soil properties of fast and bouncy cricket pitch material were selected along with the currently used soil for Sri Lankan cricket pitch preparation and used for the laboratory model studies.

Six cubic samples for the friction and bounce comparison were prepared inside the laboratory from selected three soils varying the surface grass content.

The co-efficient of friction ( $\mu$  value) and the co-efficient of restitution ( $e$  value) were determined by the bounce test and friction test respectively. Soils which had low " $\mu$ " value and high " $e$ " value were selected as suitable soils for the further proceedings of the research.

MU and TY along with MT (Mixture of both MU and TY) were selected to carry on further studies in an actual cricket pitches in order to check their ability to generate pace and bounce.

Besides selected area of the cricket pitch was daily photographed and surface crack density was analysed using MATLAB software.

MU was selected as the most suitable soil from among all tests soils and recommended to be used for the development of local fast and bouncy cricket pitches in Sri Lanka.

**Keywords:** Pace, bounce, cricket pitch, clay

# DEDICATION

*To my parents, teachers and all cricket loving readers*



## ACKNOWLEDGEMENT

First of all, I would like to express my sincere gratitude to my supervisor, Dr. U.P. Nawagamuwa, senior lecturer at the Department of Civil Engineering of University of Moratuwa, for his valuable guidance during my master study. It has been a great honor to have him as my supervisor. Without his advice, support and perfect guidance, this research would not have been accomplished.

And I would like to thank to Dr. N.H. Priyankara and Dr. L.I.N. de Silva for giving me valuable suggestions during my two progress reviews. I am truly grateful for their time and valuable comments.

Moreover special thanks go to the undergraduate students who worked with me as a team – Mr. H.W.N. Wijerathna (Batch 11) and Mr. G.N.U. Thilakarathna (Batch 12). Without their help and assistance this research would not be a success.

I would like to extend my gratitude to Head of the Department, Prof. J.M.S.J. Bandara and former head Prof. S.M.A Nanayakkara, Department of Civil Engineering, University of Moratuwa in providing this opportunity. A special gesture of appreciation is also conveyed to department research coordinator, Prof. A.A.D.A.J. Perera, and Prof. S.A.S. Kulathilaka, Head of the division of Geotechnical Engineering for giving their full support in research and evaluation.

The assistance given by Mr. K.R. Pitipana Arachchi, technical officer, Mr. D.G.S. Vithanage, technical officer, Mr. Ajith, lab assistant and Mrs. Pradeepa of the Soil Mechanics Laboratory of the University of Moratuwa, during the laboratory tests is acknowledged.

Special thanks goes Prof. Ranjith Mapa from University of Peradeniya, Ms. Sumangali and the staff of Agricultural Research center, Murunkan, Dr. N.P. Rathnayaka and Mr. M.N.P. Dushantha from Department of Earth Resources Engineering University of Moratuwa.

Mr. Priyantha Fernando, curator at Tyronne Fernando stadium and Mr. Priyantha Perera, curator, at University of Moratuwa grounds and the ground staff in both grounds helped me immensely to make this research a success.

Also Mr. K. Mathivanan, Vice President of Sri Lanka Cricket supported in numerous ways and also provided cricket balls of premier club matches conducted by SLC for this research.



Many thanks are extended to University of Moratuwa for the services provided during the research and to the Senate research council of University of Moratuwa, Sri Lanka for funding this research under the Grant no SRC/LT/2015/07.

Finally, I would like to thank my family members for their love and unwavering support during my academic journey.

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## LIST OF ABBREVIATIONS

Abbreviation	Description
MU	Murunkan soil
TY	Tyronne Fernando Stadium soil
KO	Kotawehera soil
MT	Murunkan: Tyronne = 1:1 mixed Soil
+GR	with Grass
D.A.C	Days after compaction
PL <sub>MU</sub>	Ball pitching line for MU strip
PL <sub>MT</sub>	Ball pitching line for MT strip
PL <sub>TY</sub>	Ball pitching line for TY strip
H <sub>p</sub>	Height of the ball measured by the pole
H <sub>TY</sub>	Corrected vertical ball height for TY soil
H <sub>MU</sub>	Corrected vertical ball height for MU soil
HB	Hockey Ball
TCB	Test Cricket Ball
PM	Pitch Model
ms	milliseconds
T <sub>In</sub>	Time when ball passes the 1 <sup>st</sup> pole
T <sub>Out</sub>	Time when ball passes the 2 <sup>nd</sup> pole

$T_p$	Ball pitching time
g	gravitational acceleration $9.81 \text{ ms}^{-1}$
J	Joules
k	kilo
LPA	Laser Particle Analyser
Gs	Specific gravity
$\mu$	Coefficient of Friction
e	Coefficient of Restitution
m	meters
cm	centimeters
ER%	Percentage reduction in total energy
MC%	Moisture Content
USCS	Unified Soil Classification System
SL	Sri Lanka / Sri Lankan
AUS	Australia / Australian
L/H	Light hand operated roller
H/H	Heavy hand operated roller
VR	Vibratory Rammer
WBR	Walk behind roller