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DEVELOPMENT OF FAST AND BOUNCY CRICKET PITCHES IN SRI LANKA

W.S.U. Perera

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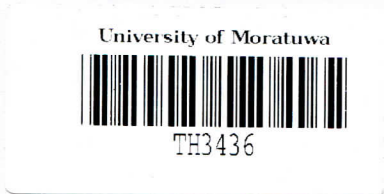
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DEVELOPMENT OF FAST AND BOUNCY CRICKET PITCHES IN SRI LANKA

Weerakkody Sahan Udakara Perera

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 (μ value) and the co-efficient of restitution (e value) were determined by the bounce test and friction test respectively. Soils which had low " μ " 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



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TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	vi
LIST OF FIGURES	x
LIST OF TABLES	xiv
LIST OF ABBREVIATIONS	xiv
1 INTRODUCTION	1
1.1 Game of Cricket	1
1.2 Cricket pitch and the need of Fast and bouncy cricket pitches in Sri Lanka	1
1.3 Pitch Characteristics and Need of fast and bouncy pitches in Sri Lanka.	1
1.4 Objective	2
1.5 Research approach	3
1.6 Dissertation Outline	4
2 LITERATURE REVIEW	5
2.1 Previous approaches for fast and bouncy cricket pitches	5
2.2 Layers of a typical Sri Lankan cricket pitch (Fernando, 2016)	5
2.3 Typical pitch preparation procedure (Fernando, 2016)	6
2.4 Playing characteristics of cricket pitches	7
2.4.1 Clay content of the soil, clay minerology and the impact	8
2.4.2 Smectite clay minerology and properties	10
2.4.3 Correlations between pitch characteristics and behaviour of ball	11

2.5	Previous tests on soils -----	12
2.5.1	Laboratory tests (Perera & Nawagamuwa, 2015).....	12
2.5.1	Soils used in previous researches.....	14
2.5.2	Laser Particle Analyser (LPA) test.....	15
2.5.3	X-Ray Diffraction (XRD) test.....	16
2.6	Previous tests for pace and bounce -----	16
2.6.1	The friction test.....	16
2.6.2	Pace Rating.....	17
2.6.3	Condition of the cricket ball during testing (James, et al., 2012)	18
2.7	Energy input to the soil in compaction -----	18
2.8	Effect of roller compaction on soil (Shipton, et al., 2006) -----	19
2.9	Camera set up and videography of deliveries -----	19
2.9.1	Camera.....	20
2.9.2	Positioning of the camera.....	21
3	SAMPLE SELECTION AND PREPARATION FOR LABORATORY TESTS -----	23
3.1	Introduction-----	23
3.2	Selection of samples-----	23
3.2.1	Murunkan soil sample (MU).....	24
3.2.2	Clay used in the Tyrone Fernando Stadium (TY).....	25
3.2.3	Kotawehera soil sample (KO).....	26
4	LABORATORY EXPERIMENTS AND RESULTS-----	27
4.1	Particle size distribution test-----	27
4.1.1	Test Results of the particle size distribution test.....	28
4.1.2	Summary of the particle size distribution test.....	29

4.2	Laser Particle Analysis (LPA) -----	29
4.3	Results of Laser Particle Analysis -----	30
4.3.1	Conclusion of Laser Particle Analysis	32
4.4	Atterberg limit test -----	33
4.4.1	Atterberg limit test results	33
4.4.2	Conclusion of the Atterberg test results	35
4.5	Degree of Colloidal Activity -----	35
4.5.1	Results of Degree of Colloidal Activity	35
4.5.2	Conclusion of Degree of Colloidal Activity according to the CF by Hydrometer	36
4.5.3	Conclusion of Degree of Colloidal Activity according to the CF by LPA 36	
4.6	X-Ray diffraction Test (XRD) -----	37
4.6.1	Results of the XRD Test	37
4.6.2	Conclusion of the XRD Test	39
4.7	Proctor Compaction Test -----	40
4.7.1	Results of the proctor compaction test	40
4.7.2	Conclusion of the Proctor compaction results	41
4.8	Specific gravity test -----	42
4.8.1	Results of the Specific gravity test	42
4.8.2	Conclusion of the Specific gravity test	42
4.9	Organic matter content test -----	42
4.9.1	Results of Organic matter content test	43
4.9.2	Conclusion of the Organic matter content test	43
4.10	Conclusion from the laboratory test results -----	43
5	LABORATORY MODEL STUDIES -----	46

5.1	Introduction-----	46
5.2	Preparation of samples for the laboratory model -----	46
5.3	Tests for the Laboratory Model -----	52
5.3.1	Friction Test	52
5.3.2	Bounce test for the laboratory model	64
5.3.3	Pace rating by murphy.....	72
6	TESTS FOR THE ACTUAL FIELD CONDITIONS-----	75
6.1	Preparation of soils -----	75
6.1.1	Murunkan sample.....	75
6.1.2	Tyronne Sample	76
6.1.3	Ant Clay sample.....	76
6.2	Preparation of the pitch area at the university grounds.-----	76
6.2.1	Procedure.....	77
6.2.2	Ant-clay Layer.....	80
6.2.3	Core cutter test for Ant clay layer	80
6.2.4	Compaction energy given to the ant clay layer by vibratory rammer..	82
6.2.5	Compaction of the cricket pitch	83
6.2.6	Compaction Methodology.....	83
6.2.7	Re-laying of Murunkan soil	84
6.3	Compaction of the model pitch -----	86
6.4	Summary of the applied energy on the pitch -----	88
6.5	Variation of the Moisture content -----	88
6.6	Testing of the pitch -----	90
6.7	Pace test-----	91
6.8	Bounce Test -----	92

6.9	Measurement of crack density -----	93
7	CALCULATIONS, RESULTS AND DISCUSSION -----	95
7.1	Bounce Test -----	95
7.2	Video recording for the pitch model -----	95
7.2.1	Video analysis for the Bounce test.....	95
7.2.2	Calculations for the parallax error.....	98
7.2.1	Results and Analysis of the bounce test for the Pitch model	99
7.2.2	Conclusion of the Bounce Test for Pitch Model	104
7.2.3	Conclusion on the “e” value of Bounce Test for pitch Model	120
7.3	Pace test-----	124
7.3.1	High Speed Video (HSV) recording	124
7.3.2	Video analysis for the Pace test.....	124
7.3.3	Videography for pace test	125
7.3.4	Calculations.....	126
7.3.5	Use of different conditions of cricket balls	129
7.3.6	Results	129
7.4	Crack density on the pitch surface-----	147
7.4.1	Surface crack density analysis.....	148
8	CONCLUSIONS-----	152
8.1	Guidelines for making fast and bouncy pitches-----	155
8.2	Limitations of the research and recommendations for further studies ----	155
8.2.1	For the laboratory models studies	155
8.2.2	For the actual field tests	156
9	Bibliography-----	158

LIST OF FIGURES

Figure 1.1 Schematic view of the research approach	3
Figure 2.1 Layers of a typical SL pitch	6
Figure 2.2 Data courtesy of SLC and NZSTI, (Nawagamuwa, et al., 2009)	9
Figure 2.3 USCS chart , Perera et al. 2015	13
Figure 2.4 The principle of laser diffraction analysis (Burrows, 2013)	15
Figure 2.5 Camera positioning - (James , et al., 2004)	20
Figure 2.6: Angle of view in iPhone 6S	21
Figure 3.1 Locations of the selected samples	24
Figure 3.2 Excavation of pits in clay deposits	25
Figure 3.3 Tyrone soil	25
Figure 3.4 Cracked Buildings due to Expansive soils	26
Figure 3.5 Obtaining samples from Kotawehera	26
Figure 4.1 Particle size distribution test results	28
Figure 4.2 Laser Particle analyser Machine and Prepared samples	29
Figure 4.3 LPA test for MU	30
Figure 4.4 LPA test for KO	30
Figure 4.5 LPA test results of TY	31
Figure 4.6 Combined particle size distribution curves	32
Figure 4.7 Comparison of Liquid limits	33
Figure 4.8 Soil Classification Chart	34
Figure 4.9 XRD for MU	37
Figure 4.11 XRD for TY	38
Figure 4.10 XRD for KO	38
Figure 4.12 Typical graphs for Dry density vs MC%	41
Figure 5.1 - 25mm x 25mm Grid on the surface of the ant clay layer	47
Figure 5.2 Preparation of grass for planting	47
Figure 5.3 Penetrating roots inside the ant clay layer	48
Figure 5.4 Six cubic moulds with/without grass	48
Figure 5.5 Adding fertilizer	48
Figure 5.6 Applying 10kN force by the CBR machine	49
Figure 5.8 TY sample with 1st clay layer of 30mm	50
Figure 5.8 Final TY sample with 3 compacted soil layers	50
Figure 5.9 Final appearance of the prepared six samples	50
Figure 5.10 compacting by AMSLER machine	51
Figure 5.11 Six samples were wrapped with a polythene sheet	51
Figure 5.12 Friction test apparatus	53

Figure 5.13: Combination of new balls and 30 overs played balls-----	54
Figure 5.14 Friction test apparatus and arrangement of dial gauges-----	54
Figure 5.15 Friction Apparatus-----	56
Figure 5.16 Samples without grass model tests between MC% and no of Days-----	58
Figure 5.17 Samples with grass model tests between MC% and no of Days-----	59
Figure 5.18 Typical Friction force - Reaction force graph for Day5, New ball-----	60
Figure 5.19 Friction-Load Graphs comparison with days (TY, New Ball)-----	61
Figure 5.20 μ value Vs Days for MU-----	62
Figure 5.21 Comparison of μ value for TY with and without grass (New ball, Day 1)-----	63
Figure 5.22 Percentage change of μ w.r.t. TY for New ball-----	64
Figure 5.23 Image of the ball at its maximum rebound height (MU day 3)-----	65
Figure 5.24 Bounce test apparatus-----	66
Figure 5.25 Avg. Rebound height vs Days-----	68
Figure 5.26 e value vs Day for Samples without grass-----	69
Figure 5.27 e value vs Day for Samples with grass-----	70
Figure 5.28 Normalized 'e' Vs number of Days for Samples without grass-----	71
Figure 5.29 Normalized "e" Vs Day for Samples with grass-----	72
Figure 6.1 Crushing and sieving Murunkan soil-----	75
Figure 6.2 Location of the testing area in the university grounds (Not to a scale)-----	76
Figure 6.3 Grass placed within pipes and placing in the pitch-----	78
Figure 6.4 Compacted ant clay layer and holes driven in-----	78
Figure 6.5 Watering and laying of soil again-----	78
Figure 6.6 Excavated pit for the pitch model-----	79
Figure 6.7 Existing clay layer thickness-----	79
Figure 6.8 Light roller/ hand roller-----	79
Figure 6.9 Machine roller compaction-----	79
Figure 6.10 Prepared model pitch for testing-----	79
Figure 6.11: Core cutter test-----	80
Figure 6.12: Core cutter dimensions-----	81
Figure 6.13 Mixing of two soils-----	85
Figure 6.14 Arrangement of compacted soil within the pit in two stages (Stage 1 on left and stage 2 on right)-----	85
Figure 6.15 Model pitch during first stage of testing for MU and TY-----	90
Figure 6.16 Model pitch during second stage of testing for MU and MT-----	90
Figure 6.17 Arrangement of camera for the testing procedure-----	91
Figure 6.18: Good length area of the pitch-----	92
Figure 6.20: Image analysis results of a digital photograph which covers 300x300mm of the prepared-----	93

Figure 7.31 Average bounce normalized by applied energy vs days for TY, MU, MT - Test cricket ball	123
Figure 7.32 iPhone 6s used in the field tests	124
Figure 7.33 Corrections for the horizontal distance measurements in pace test	125
Figure 7.34: Corrections for the horizontal distance measurements in pace test	125
Figure 7.35 Corrections for the vertical distance measurements in pace test	126
Figure 7.36 Energy reduction percentage for TY & MU, new ball	130
Figure 7.37 Energy reduction percentage for MT & MU, new ball	130
Figure 7.38 Energy reduction percentage for TY, MT & MU, new ball	131
Figure 7.39 Energy reduction percentage for TY & MU, 30 over ball	132
Figure 7.40 Energy reduction percentage for MT & MU, 30 over ball	132
Figure 7.41 Energy reduction percentage for TY, MT & MU, 30 over ball	133
Figure 7.42 Energy reduction percentage for TY & MU, 60 over ball	134
Figure 7.43 Energy reduction percentage for MT & MU, 60 over ball	134
Figure 7.44 Energy reduction percentage for TY, MT & MU, 60 over ball	135
Figure 7.45 Normalized ER% by applied energy for TY & MU (high MC%), new ball	136
Figure 7.46 Normalized ER% by applied energy for MT & MU, new ball	136
Figure 7.47 Normalized ER% by applied energy for TY, MT & MU, new ball	137
Figure 7.48 Normalized ER% by applied energy for TY & MU (high MC%), 30 over ball	138
Figure 7.49 Normalized ER% by applied energy for MT & MU, 30 over ball	138
Figure 7.50 Normalized ER% by applied energy for TY, MT & MU, 30 over ball	139
Figure 7.51 Normalized ER% by applied energy for TY & MU, 60 over ball	140
Figure 7.52 Normalized ER% by applied energy for MT & MU, 60 over ball	140
Figure 7.53 Normalized ER% by applied energy for TY, MT & MU, 60 over ball	141
Figure 7.55 Normalized ER% by MC% for MT and MU, new ball	142
Figure 7.54 Normalized ER% by MC% for TY and MU (high MC%), new ball	142
Figure 7.56: Normalized ER% by MC% for TY, MT and MU, new ball	143
Figure 7.57 Normalized ER% by MC% for TY and MU (high MC%), 30 over ball	144
Figure 7.58 Normalized ER% by MC% for MT and MU, 30 over ball	144
Figure 7.59 Normalized ER% by MC% for TY, MT and MU, 30 over ball	145
Figure 7.60 Normalized ER% by MC% for TY and MU (high MC%), 60 over ball	146
Figure 7.61: Normalized ER% by MC% for MT and MU, 60 over ball	146
Figure 7.62: Normalized ER% by MC% for TY, MT and MU, 60 over ball	147
Figure 7.63 Actual image of the pitch and image analysis results by MATLAB software	147
Figure 7.64 - Crack density% vs MC%	149
Figure 7.65 Crack density percentage vs days	149
Figure 7.66 - Crack density (%) / MC% vs Days	151

LIST OF TABLES

Table 2.1 Properties of clay used in Australian pitches (Nawagamuwa,et al.,2009).....	8
Table 2.2: Soil properties used in England pitches.....	10
Table 2.3: Pace rating categorization	17
Table 4.1 List of carried out laboratory tests and test standards.....	27
Table 4.2 Particle Size distribution results	29
Table 4.3 Percentage passing at the clay and silt range.....	32
Table 4.4 Atterberg Limits of the tested soils	34
Table 4.5 Degree of Colloidal activity with CF by Hydrometer	36
Table 4.6 Degree of Colloidal activity with CF by LPA.....	36
Table 4.7 Summary of the XRD Test for MU.....	39
Table 4.8 Summary of the XRD Test for KO.....	39
Table 4.9 Summary of the XRD Test for TY.....	39
Table 4.10 Comparison of Maximum Dry densities and Optimum Moisture Contents (OMC)	41
Table 4.11 Specific gravity test results.....	42
Table 4.12 Organic matter content results.....	43
Table 5.1 Results of the Coefficient of friction.....	57
Table 5.2 MC% of the top surface of the samples on each day.....	58
Table 5.3 Average rebound heights in cm.....	67
Table 5.4 e values.....	69
Table 5.5 "e" value Normalized by M.C.....	71
Table 5.6 Pace rating by Murphy (1985).....	73
Table 5.7 Pace rating for new ball.....	73
Table 5.8 Pace rating for 30 overs used ball.....	74
Table 5.9 Pace rating 60 overs used ball	74
Table 6.1 Energy by each roller	86
Table 6.2 Daily cumulative compaction energy input per each soil during testing in Stage 1	87
Table 6.3 Energy by vibratory rammer (VR)	87
Table 6.4 Energy by rollers.....	87
Table 6.5 Daily compaction energy input during testing period of second stage.....	87
Table 6.6 Energy was applied on the pitch.....	88
Table 6.7 Variation of the MC% (Top 50mm).....	89
Table 7.1 Average Ball bounce of the Hockey ball for Pitch Model.....	100

Table 7.2 Average rebound values of the Test cricket ball for PM	102
Table 7.3 Average e value for Hockey ball	104
Table 7.4 Avg e value for Test cricket ball	107
Table 7.5 Average Bounce / % change in applied energy for HB of PM.....	109
Table 7.6 Average Bounce / % change in applied energy for TCB of PM.....	112
Table 7.7 Average Bounce / MC% for HB	114
Table 7.8 Average Bounce / MC% for TCB of PM	117
Table 7.9 Surface crack density percentage	148

Table 7.2 Average rebound values of the Test cricket ball for PM.....	10
Table 7.3 Average e value for Hockey ball.....	10
Table 7.4 Avg e value for Test cricket ball.....	10
Table 7.5 Average Bounce / % change in applied energy for HB of PM.....	10
Table 7.6 Average Bounce / % change in applied energy for TCB of PM.....	11
Table 7.7 Average Bounce / MC% for HB.....	11
Table 7.8 Average Bounce / MC% for TCB of PM.....	11
Table 7.9 Surface crack density percentage.....	14

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 _{MU}	Ball pitching line for MU strip
PL _{MT}	Ball pitching line for MT strip
PL _{TY}	Ball pitching line for TY strip
H _p	Height of the ball measured by the pole
H _{TY}	Corrected vertical ball height for TY soil
H _{MU}	Corrected vertical ball height for MU soil
HB	Hockey Ball
TCB	Test Cricket Ball
PM	Pitch Model
ms	milliseconds
T _{In}	Time when ball passes the 1 st pole
T _{Out}	Time when ball passes the 2 nd pole

T_p	Ball pitching time
g	gravitational acceleration 9.81 ms^{-1}
J	Joules
k	kilo
LPA	Laser Particle Analyser
Gs	Specific gravity
μ	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