35th ASIAN RACING CONFERENCE
HONG KONG 2014

Benchmarks and performance parameters for Racetracks

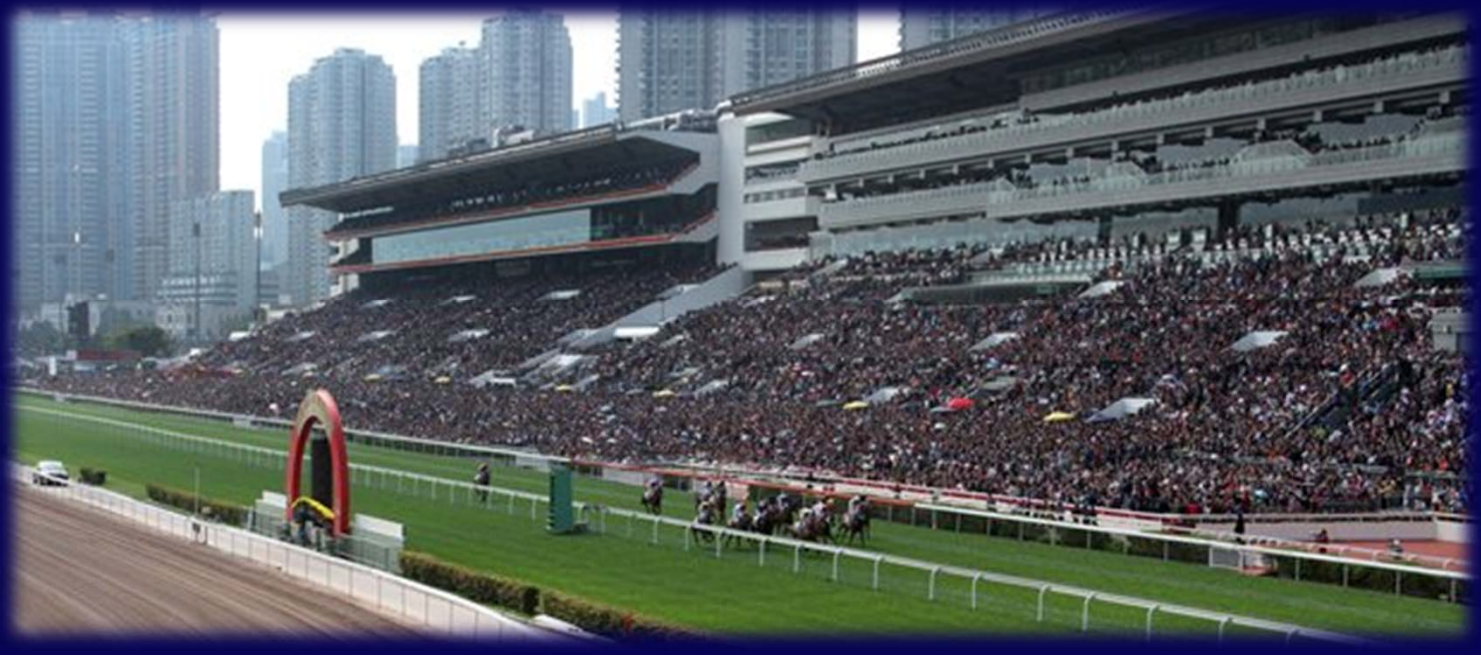
Ray Cheng – Tracks Officer
Happy Valley Tracks

CONTENT

1. Mission and Impact
2. Introduction to Tracks
3. Challenges under subtropical climate & high usage
4. Monitoring track conditions on racedays & non racedays

MISSION

- Provide World Class training & racing surfaces under best management practices



Impacts

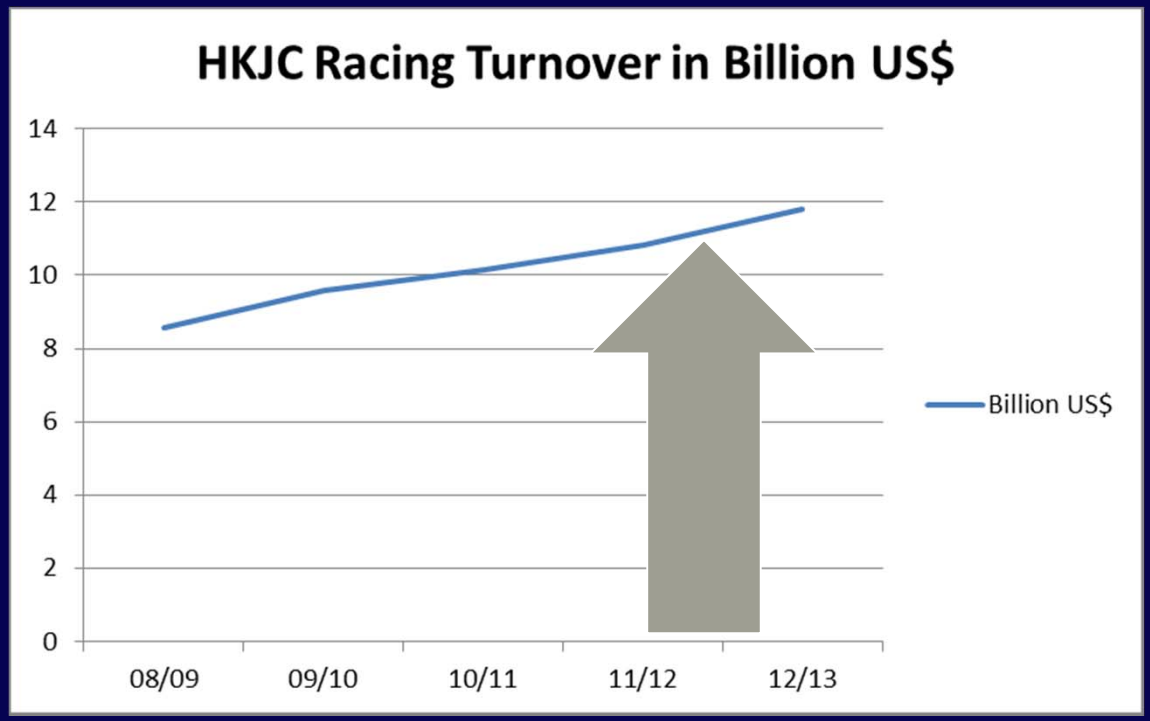
- financially Huge
- Commitment to government and public welfare
- Safety issues
- Club’s branding

So, if a race meeting was cancelled due to poor track performance:

→Major impact on the above

Impact of race cancellation under weather or poor track management

- Huge finance cost



Race Cancellation: other issues

- Difficulty in fixture replacement dates
- Numerous Parties for decision making process: Government, Public Transport and the Police
- Inconvenience to Trainers & Owners

(2) INTRODUCTION TO TRACKS

Sha Tin & Happy Valley Racecourses

STRC

HVRC

Reinforced Sand Profile_Video

Sha Tin Dirt Track

Sha Tin Dirt Track

Organization Chart—Tracks Department

DRO

Mr. John Ridley
Director Of Racing Operations

EM,T

Mr. Pako Ip
Executive Manager, Tracks

- Starting Gates
- Sha Tin Tracks
- Happy Valley Tracks

- Landscape & Horticulture Section
- Track work Dirt Track Maintenance
- Conghua Training Centre Design Support & Track Construction

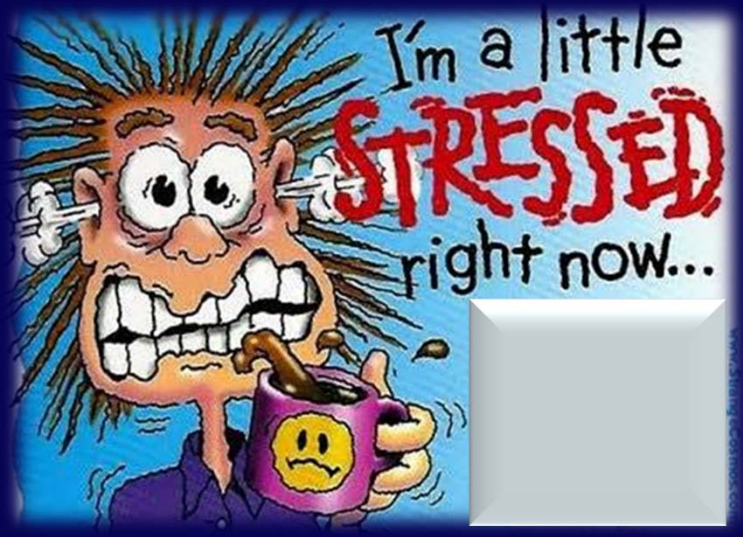
(3) CHALLENGES UNDER A SUBTROPICAL CLIMATE & HIGH USAGE

Pressure on Tracks mgt. Team

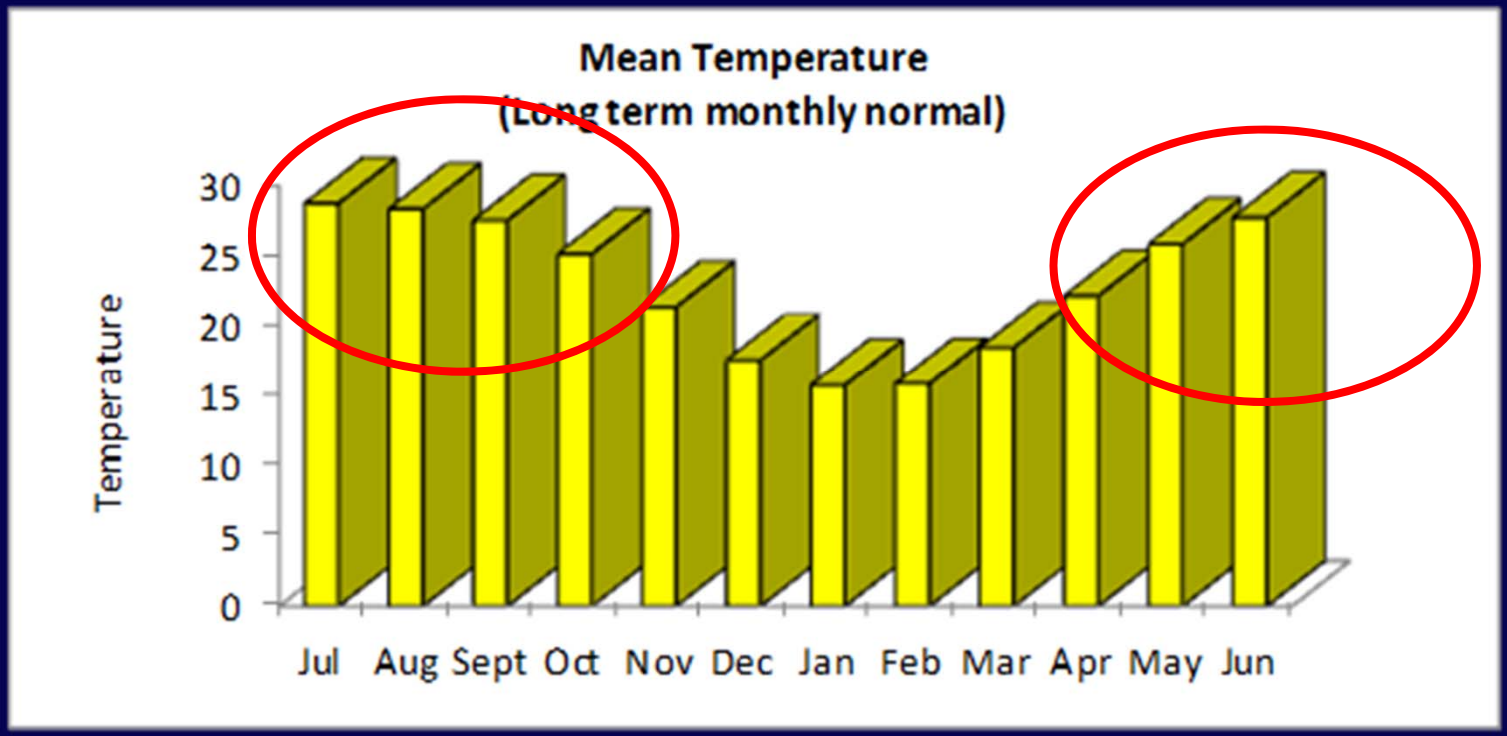
- To provide world class surfaces for horse training and racing

Challenges:

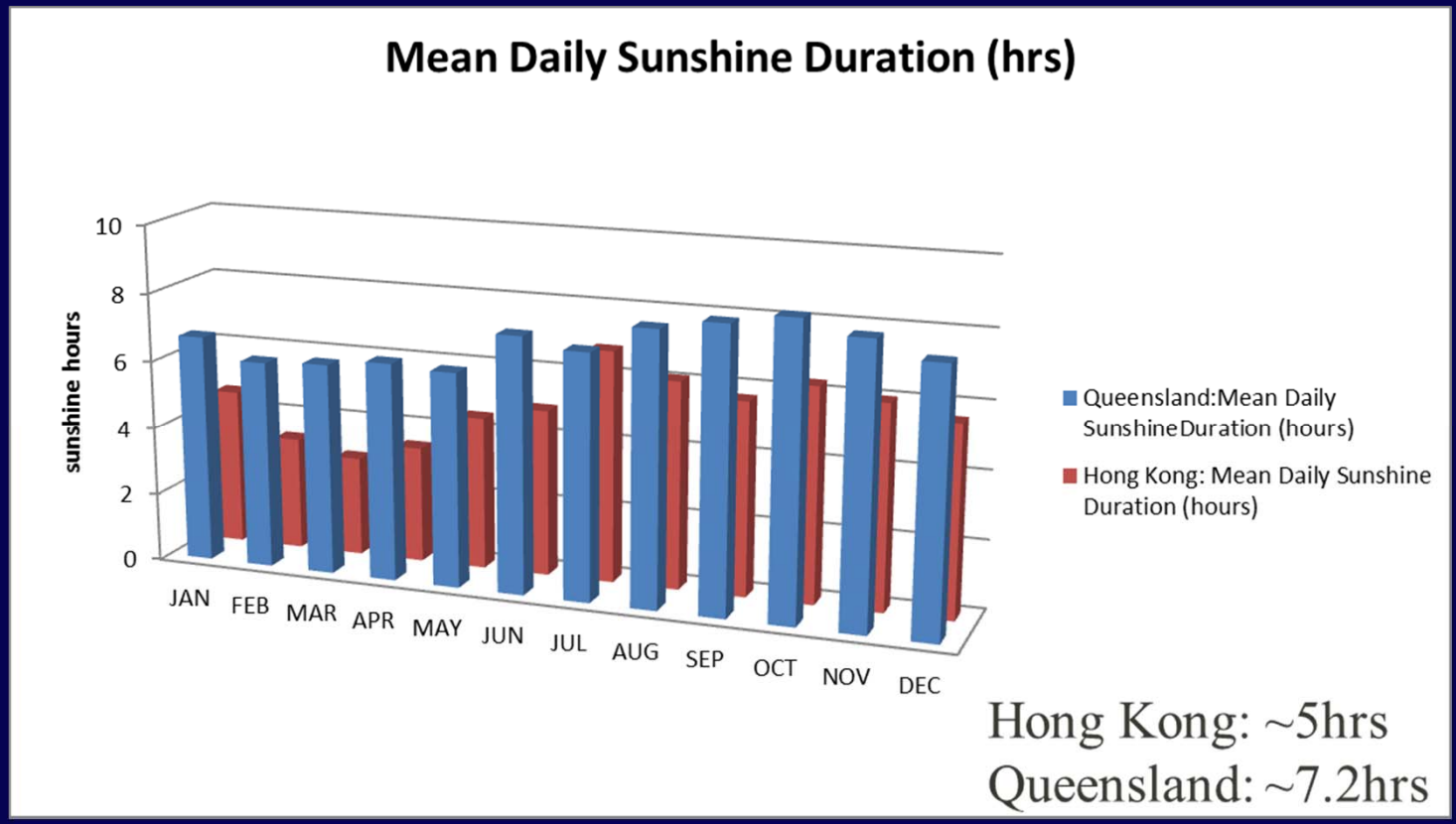
- Subtropical climate
- Low sunshine hours
- Continued usage increase
- Rainy season (May to Oct.)
- Reducing off-season break



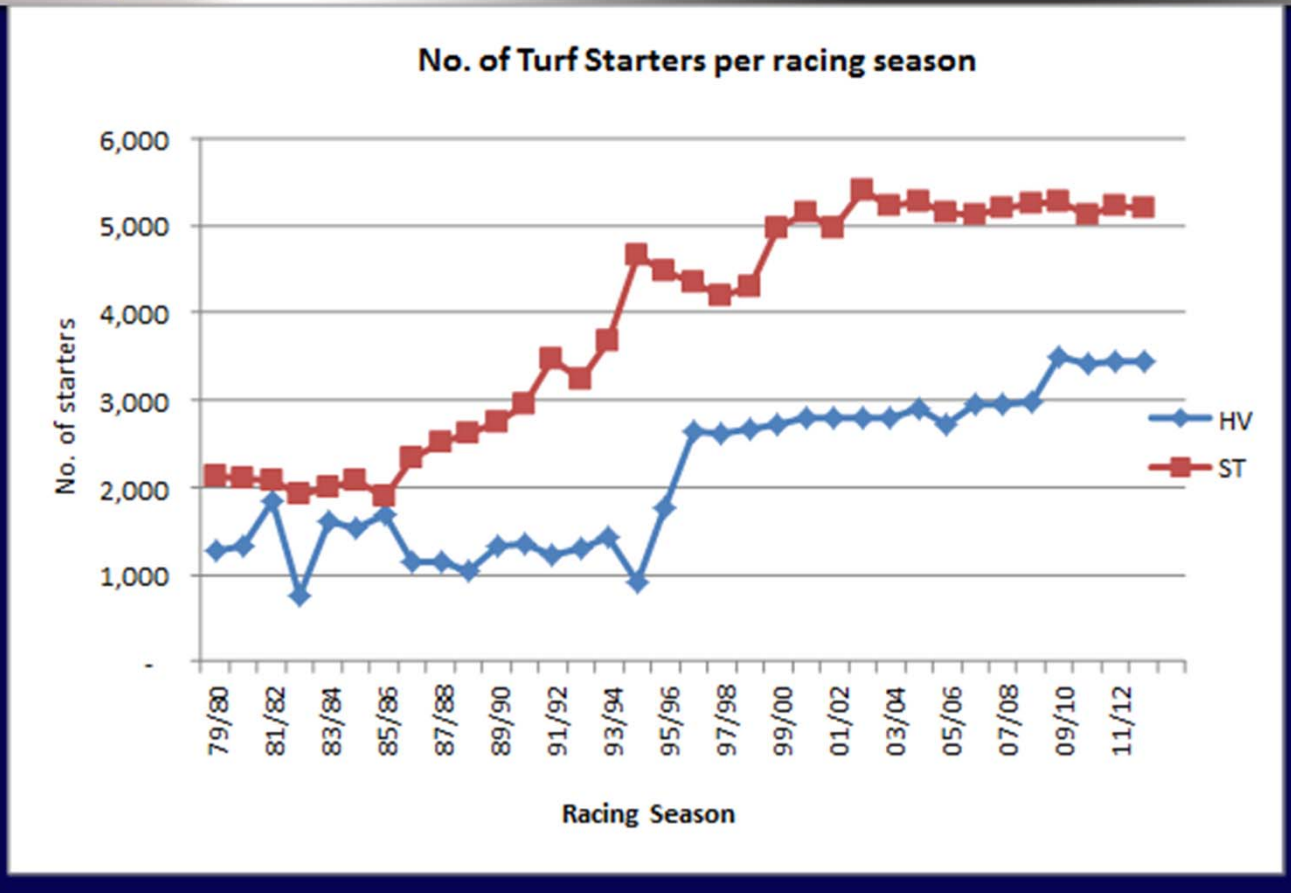
Subtropical Climate with Summer and Winter grass system



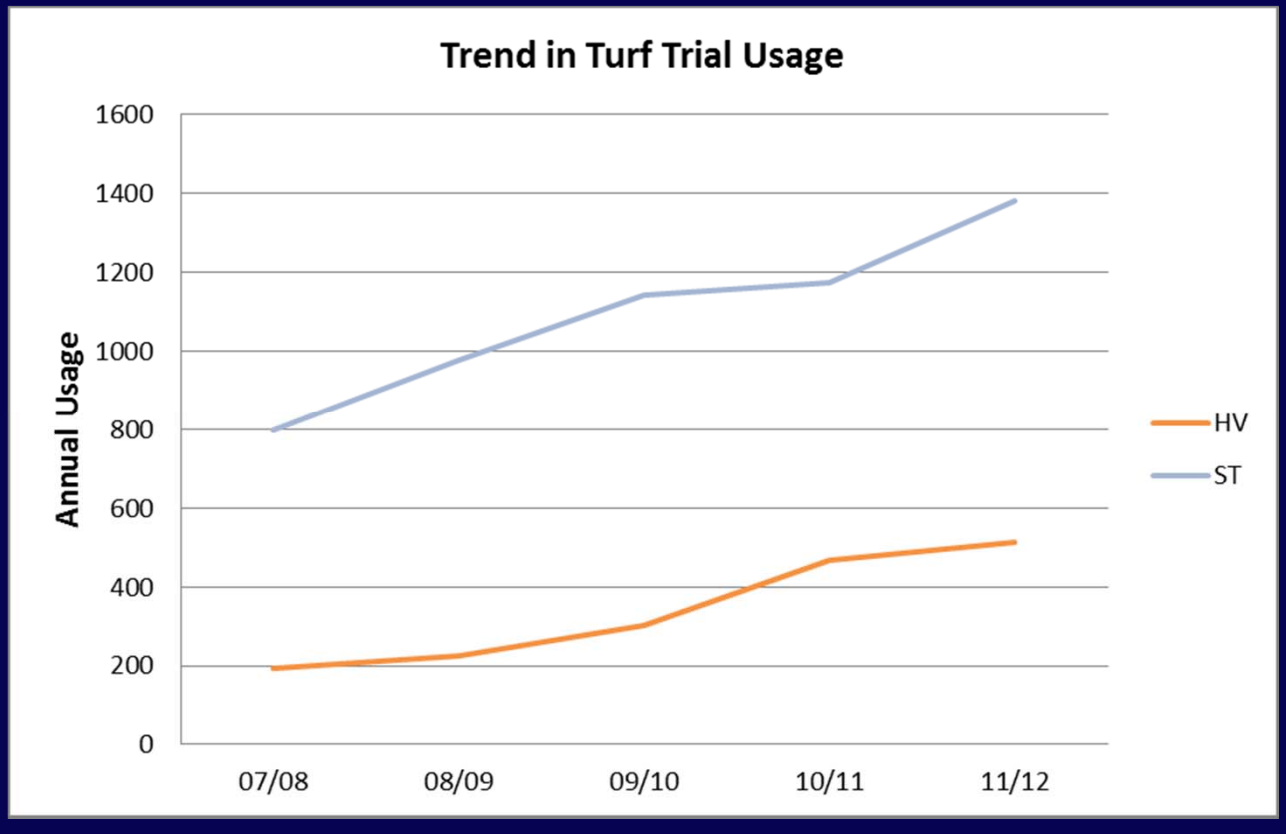
Low light levels challenge for turf culture



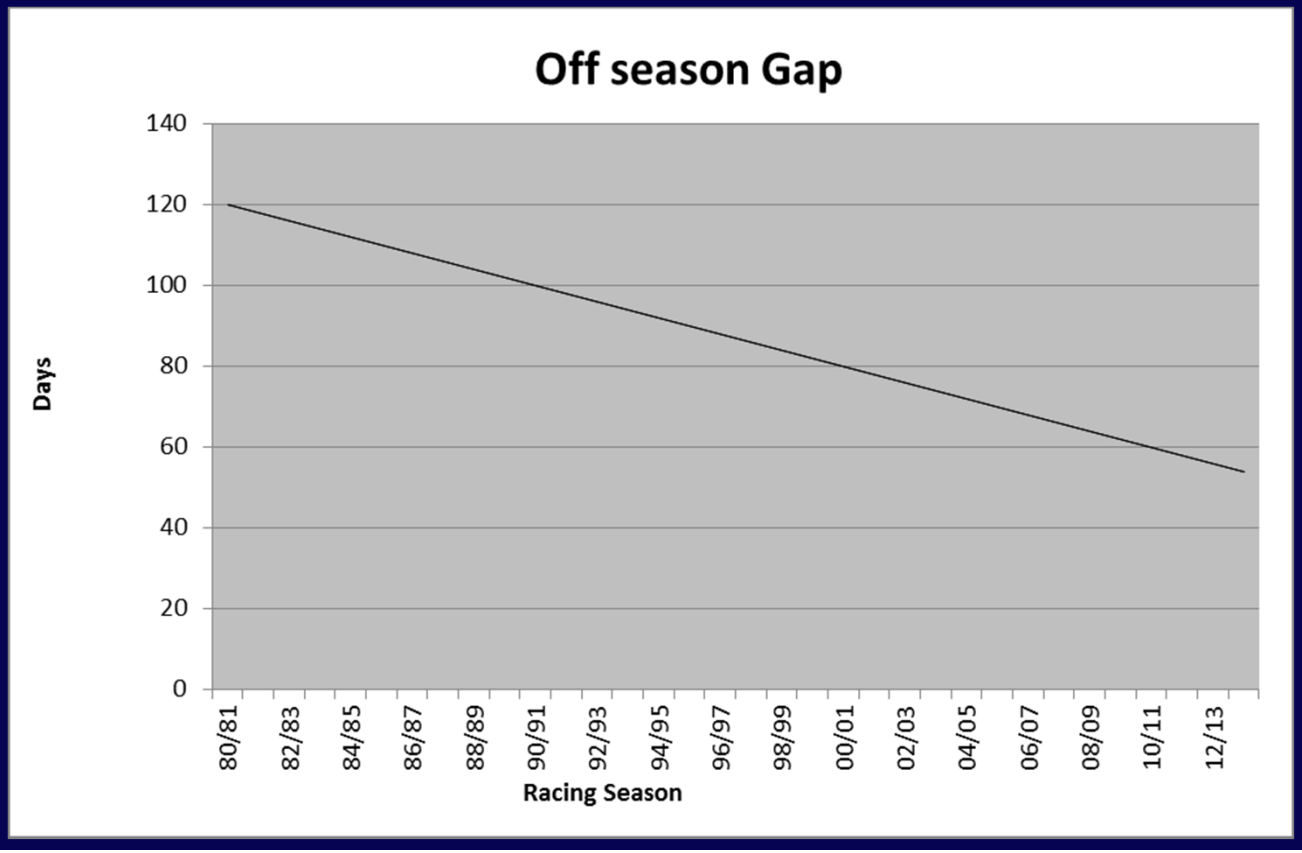
Usage-- increased race opportunities



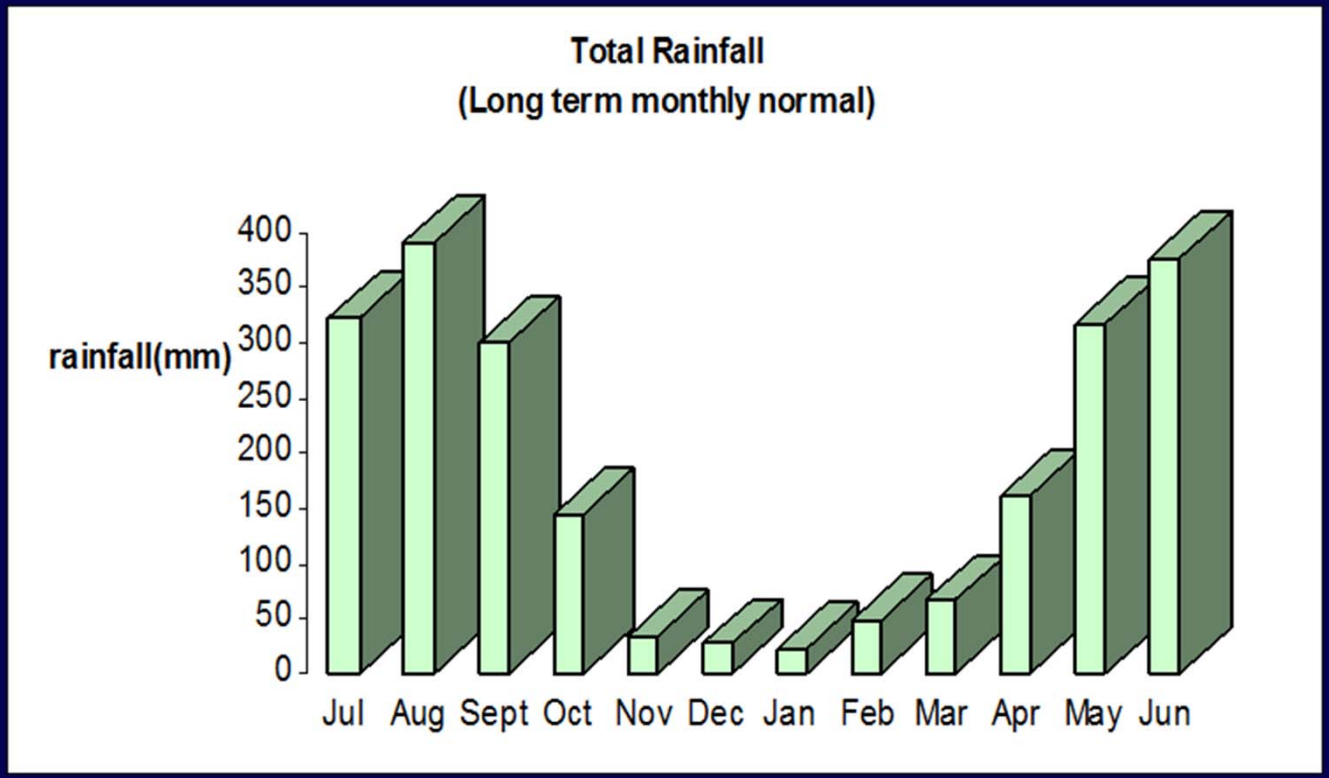
Usage-- increasing demand for grass training



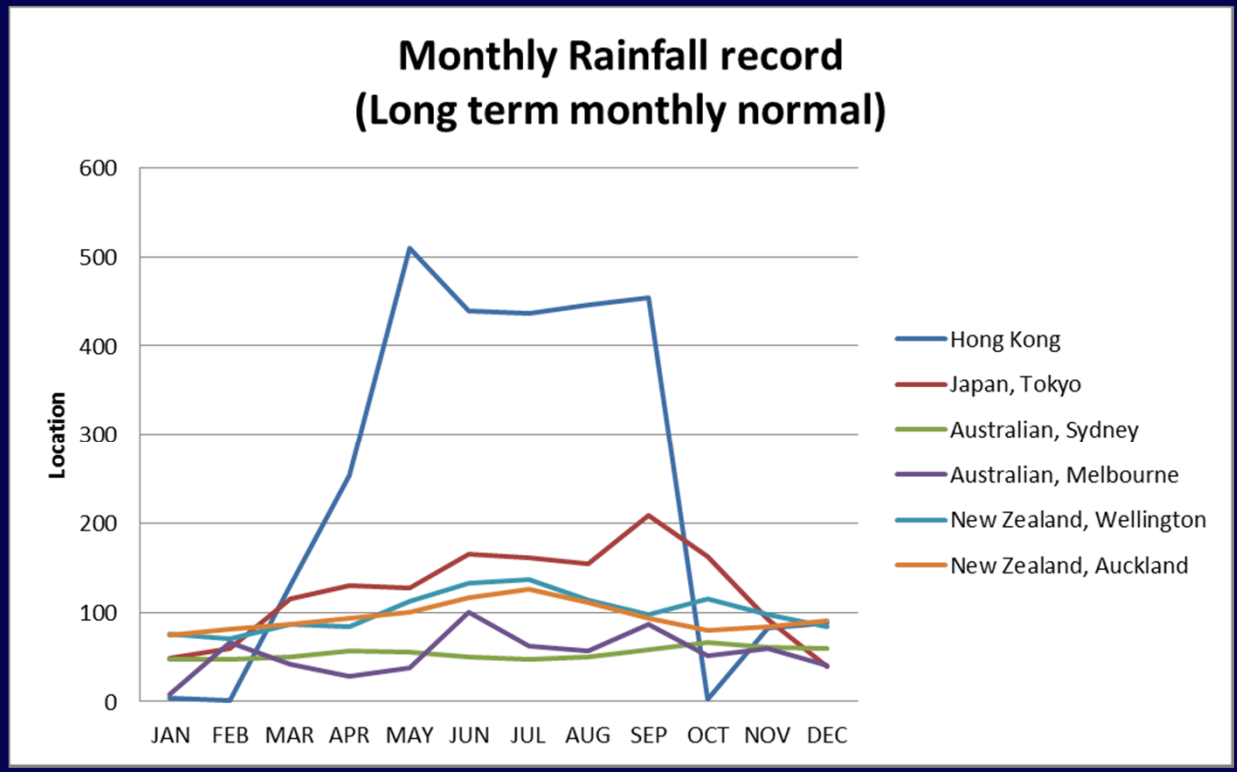
Wear recuperation--shortening offseason break for major renovation works



Racing into the rainy season

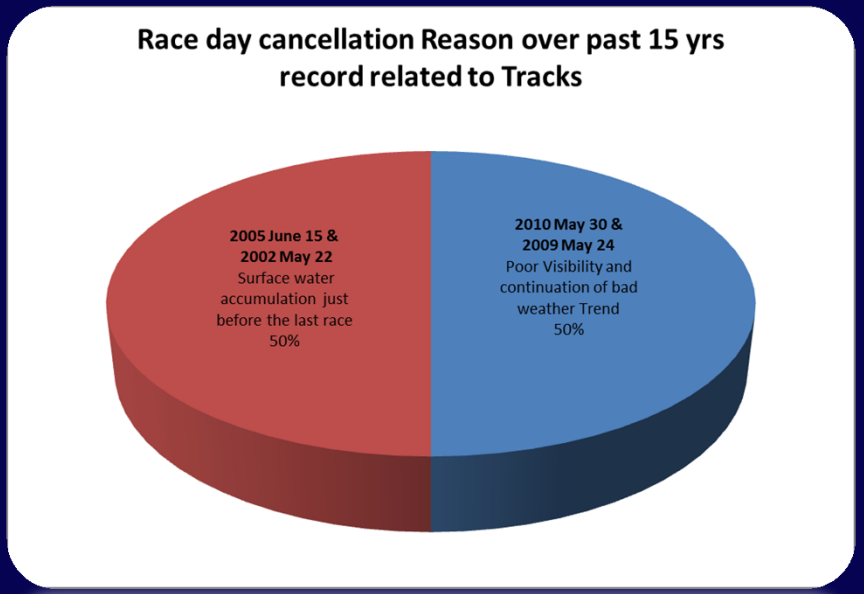


Rainfall Companion in Different Locations



Sources from:
http://www.bom.gov.au/jsp/ncc/cdio/cvg/av
http://www.weather.gov.hk/wxinfo/pastwx/ywx2013.htm
http://www.tourleader.co.nz/index.php/new-zealand-climate-charts
http://www.hko.gov.hk/wxinfo/climat/world/eng/australia/au_nz_e.htm

2014-2000 past 15 yrs. Record (4 races due to track condition)



- 2 races cancelled due to surface water
- 2 races cancelled due to visibility under extreme rain conditions

Racing under heavy rain-- Video Clip (30th May 2010)

Horse racing is Possible!!

- Heavy Raining at Race 8 (Mr. Medici)

→excellent drainage design &

→excellent floodlighting system

- Abandoned Races 10&11

→poor visibility (safety issue)

→bad weather (thunderstorm continued)

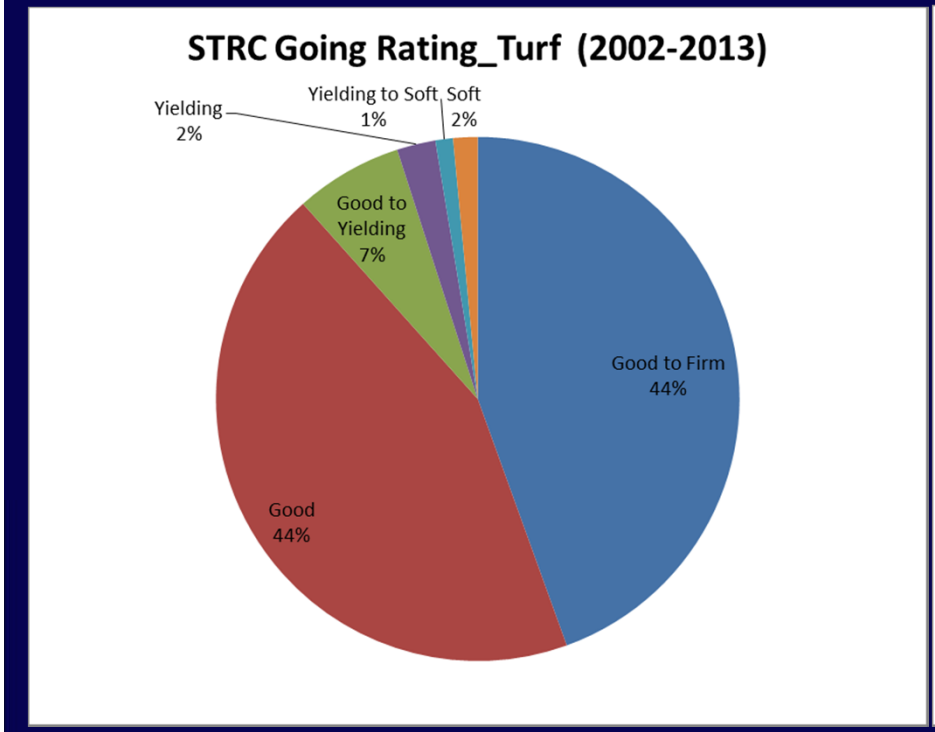
Racing under heavy rain

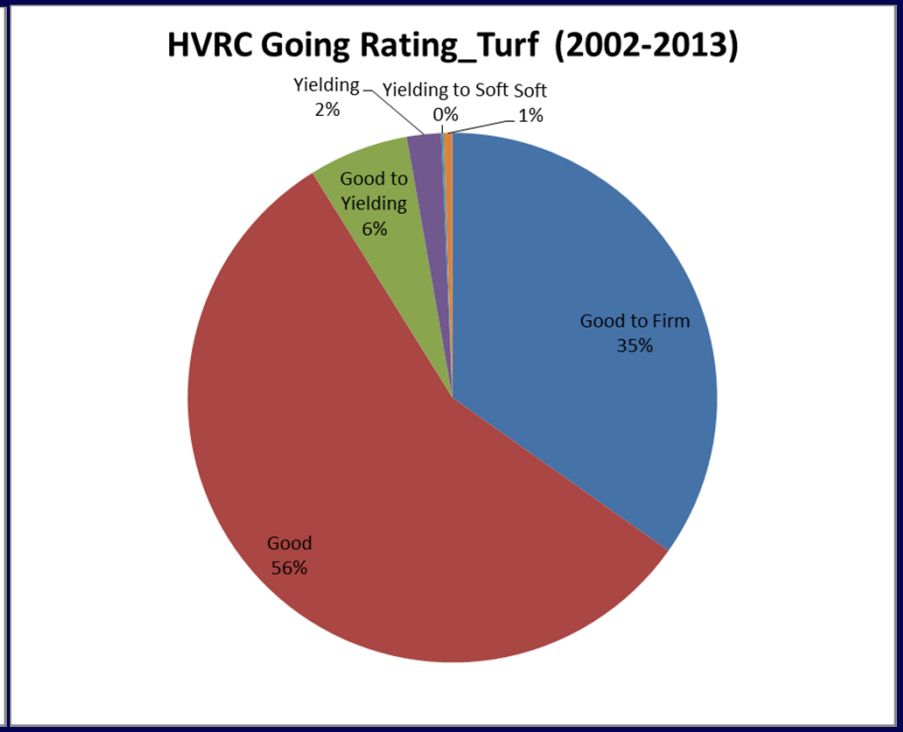
(4) MONITORING TRACK CONDITIONS ON RACEDAYS & NON RACEDAYS

Track Surfaces Monitoring: Racedays

- Track Ratings
- Assessment devices
- Procedures

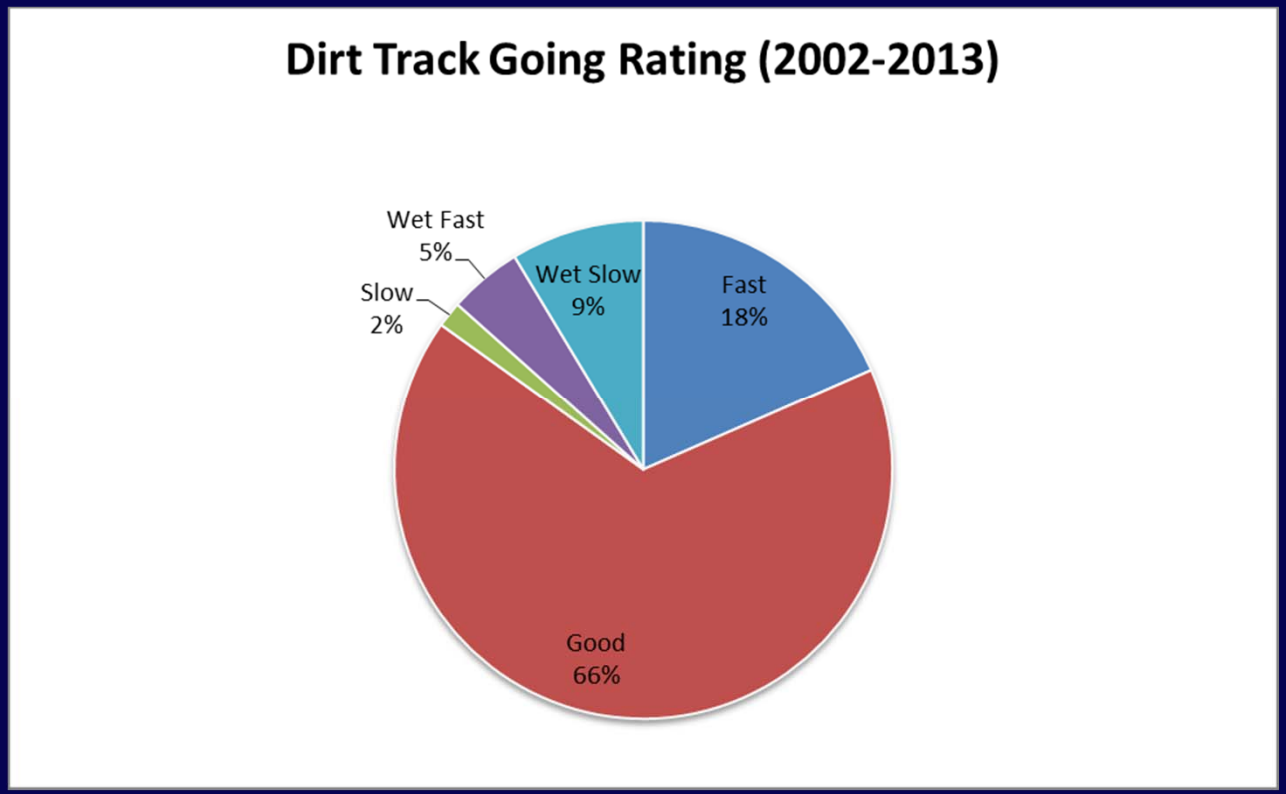
Track Ratings Distribution





Note: never been a Heavy rating at commencement of racing

Sha Tin Dirt Track Rating Distribution



Assessment Process

1) At 07:00am, official assessment by Director of Racing Operations

<u>Internal monitoring and record keeping</u>

2) 2 hrs. before the first race
3) During the races
4) After the races

Assessment Devices Used

- **Penetrometer:** resistance toward the surface
- **Shear Vane:** resistance at surface
- **Clegg hammer:** surface hardness
- **Going Stick:** resistance to penetration and surface deformation




Race morning irrigation

- Irrigation of the track as required to keep moisture content near desired levels

Going Assessment produced 2 hours before first race

Result:

DATE	10/03/12
RAIL POSITION	C+3
RAINFALL (at 08:30)	0.3

Pen.	2m from rail	3m from rail	Average
TS	2.7	2.7	2.7
WP	2.8	2.8	2.8
200	2.7	2.7	2.7
400	2.8	2.8	2.8
600	2.9	2.9	2.9
800	2.8	2.8	2.8
1000	2.6	2.7	2.7
1200	2.7	2.6	2.7
1400	2.6	2.6	2.6
1600	2.7	2.7	2.7
Average			2.73

PENETROMETER	2.73
TURF GOING	G
WATERING	New Section 3mins

shear vane	2m from rail	3m from rail	Average
TS	7.0	7.4	7.2
WP	6.8	6.8	6.8
200	8.0	7.4	7.7
400	9.0	7.4	8.2
600	8.6	8.0	8.3
800	7.0	7.4	7.2
1000	7.2	7.2	7.2
1200	8.8	9.0	8.9
1400	7.4	7.8	7.6
1600	8.4	8.8	8.6
Average			7.77

Turf clegg	meter from inner rail 1	2	3	4	5	6	Average (2.25kg)
TS	8	8	7	7	8	7	7.5
WP	7	7	8	7	7	7	7.2
200	6	7	7	7	6	6	6.5
400	7	7	7	6	6	6	6.5
600	7	7	7	7	7	7	7.0
800	7	7	6	7	6	6	6.5
1000	7	6	7	6	7	6	6.5
1200	7	7	6	7	7	6	6.7
1400	7	8	7	8	7	7	7.3
1600	7	7	7	7	6	6	6.7
Average							6.83

2 hours before 1st race:	10-Mar C+3		Last race meeting: 04-Mar B+2	26-Feb A+3	19-Feb A
Turf	G		G	G	G
AWT	G		nil	nil	G
penetrometer	2.73		2.70	2.73	2.71
Turf clegg hammer	6.83	(Old Clegg)	6.82	6.78	6.75
shear vane	7.77		7.62	7.61	7.12
going stick	7.76		7.28	7.25	7.04
AWT clegg hamme	9.90				9.94

During races

More data is collected during the races:

- Soil samples
- Jockeys’ comments
- Race times monitored
- Race distribution data recorded

During races-- Soil samples collected

- 75mm soil samples are collected every 200m along the racing strip
- Samples are dried after races to determine their exact moisture content
- Data is useful to evaluate pre-race irrigation and allow a better understanding of the wear pattern

Lab. Procedure--Moisture Content

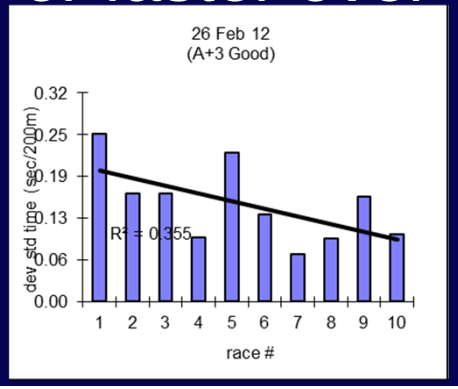
During Races--

Jockeys' comments are collected

- Comments are collected throughout the race day to monitor changes in track condition
- Enhance communication between jockeys and track's management

During Races-- Monitor race times

- Race times and deviations from standard times are noted to monitor changes of track behavior
- Particularly useful when racing under rain
- Study trends of race times to see if the track is getting progressively slower or faster over a number of race meetings



Speed graph

After race meeting report prepared

- Consolidate all information collected before, during and after races
- Evaluate track performance
- Assist producing the maintenance Programme for the following week
- Assist improvement of track preparations

Post Race Meeting Reporting

Result:

Date			26/02/12
Course			A+3
Going			G
Weather & watering			
Rainfall	(past 24 hrs)		0.3
Temperature			12-12.8
Relative humidity			76-77%
Watering			NS 3 mins
Track Performance Parameters			
04:30	Penetrometer at 4:30 am		2.73
	AWT clegg hammer		
2 hrs before R1	Penetrometer 2hrs to R1		2.73
	Clegg Impact Value (2.25kg)		6.78
	Shear Vane Reading		7.41
	Going Stick		7.28
	AWT clegg hammer		
Moisture Content (turf)			22.53%
Moisture Content (AWT)			
No of races on turf			10
Rolling after race no.			6
Avg deviation from standard (sec/200m)		turf	0.139
		AWT	

General Track Surface Monitoring:

To make sure the reinforced sand profile continues to meet our expectations

- Target Levels
- Nutrition Management
- Annual Physical Audit
- Data collection & transmission
- Trend Mapping
- Proactive planning

Target Levels: Scope & Parameters

- Botanical Characters: grass cover, weed, root mass
- Nutrition: pH, N. P. K soil & tissue
- Physical: hardness, shear strength, thatch depth, organic content
- Aeration contention & sub-compaction

Translating targets into performance criteria_Turf

	Parameter	Range		Defines
Surface	Shear vane (kPa)	65	85	good surface stability and traction
	Clegg hammer (g)	65	85	surface resiliency
	Sat. HC (mm h^{-1})	250	up	rapid drainage
	Unsat HC (mm h^{-1})	50	160	reduced surface wetness
Subsurface	AFP at 40 mb (%v/v)	10	16	good ryegrass growth
	Pore saturation (%v/v)	60	75	good sand cohesion
	ODR (g x 10^{-8} cm^{-2} min^{-1})	80	120	indirect measure of AFP

Nutrition Management

- Soil and Tissue testing in every three months
- Send to oversea lab. for testing

→Soil and Tissue report

Recommend: N-P-K & minerals balance, pH value etc.

Tissue Result

Hong Kong Jockey Club
Racing Operations 10/F Central Complex

Plant Tissue Samples
Completed: January 09, 2013

From: Soil, Plant, and Water Laboratory
2400 College Station Road
Athens, GA 30602
phone: 706-542-5350
e-mail: soiltest@uga.edu
http://aesl.ces.uga.edu

		%						ppm											
Lab	Sample	Ca	K	Mg	N	P	S	Al	B	Cd	Cr	Cu	Fe	Mn	Mo	Na	Ni	Pb	Zn
1778	1	0.66	2.99	0.25	5.22	0.54	0.48	86.6	3.83	<0.40	2.27	5.33	234.0	30.54	<1.00	330.1	<2.00	<5.00	62.94
1779	2	0.61	3.16	0.24	5.17	0.52	0.48	149.8	3.69	<0.40	3.95	6.54	263.9	39.23	1.13	342.5	<2.00	<5.00	53.56
1780	3	0.54	3.63	0.25	5.96	0.58	0.52	53.0	4.01	<0.40	<1.00	6.82	165.2	55.80	1.31	392.7	<2.00	<5.00	59.99

Plant Analysis Handbook for Georgia

1. Shatin Track (old section)
2. Shatin Track (2005 newsection)
3. Happy Valley Track

Annual Technical Audit (3rd party bench marking)

Provide club information to:

- Annual assay of rootzone properties
- Forecast turfgrass transition dynamics
- Monitor hardness
- Formulate end of season and offseason renovation strategies

Annual Technical Audit Tests

- Moisture Release Curve
- Saturated and Unsaturated Hydraulic Conductivity
- Oxygen Diffusion Rate
- Porosity
- Organic Matter Profile
- Recovery and Botanical Analysis

Annual Technical Audit Tests

Moisture release curve

Oxygen Content

Hydraulic conductivities

Predicting Turfgrass Transition Result

Monitoring Hardness

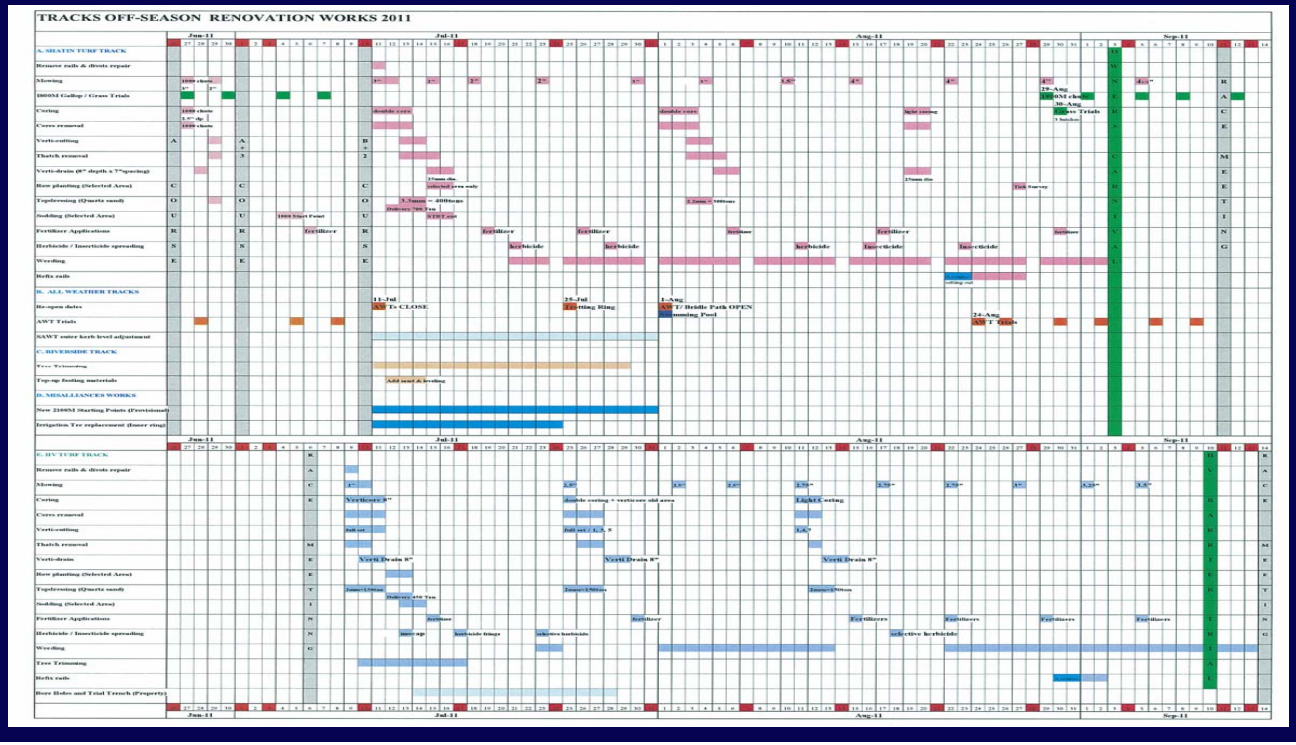
- Send after race reports (bi-weekly) to turf audit
- By reviewing decompaction methods

Assess renovation methodology:

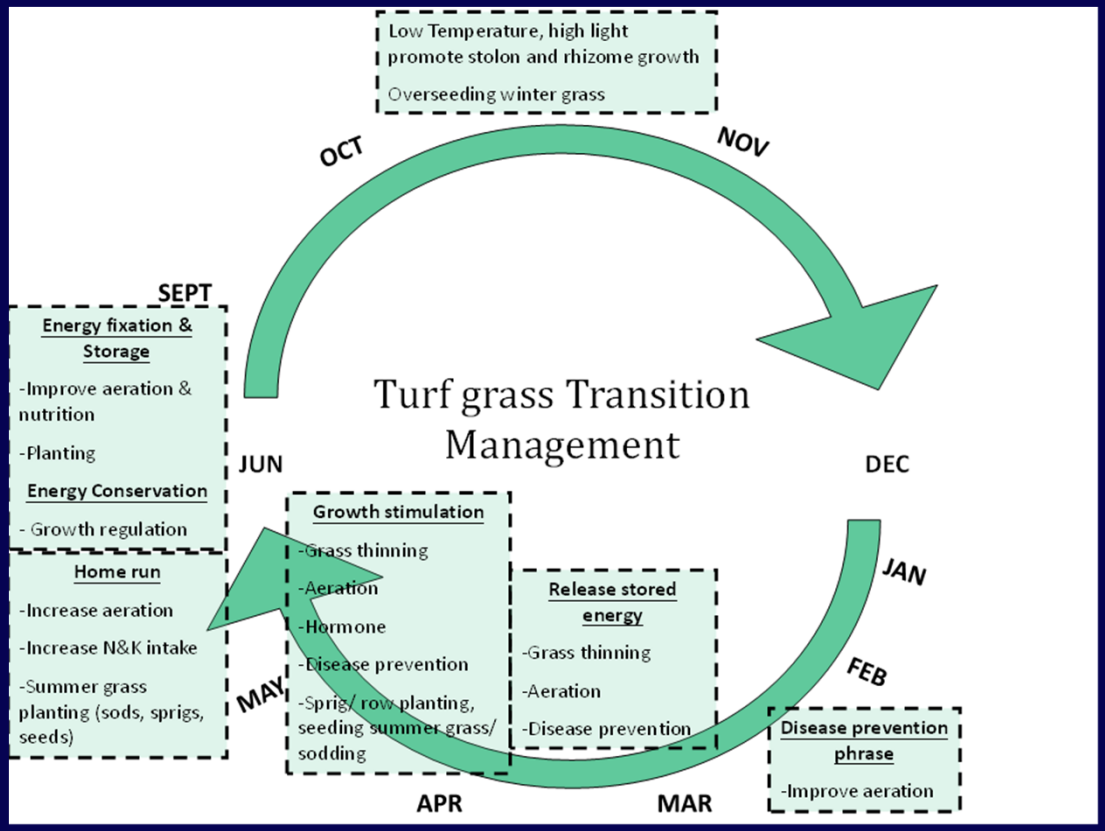
- Sequencing of verti-draining, coring, verticutting, sand topdressing
- Sanding effectively reduce speed of track

Translating audit results into an Off-season Renovation Program

- Result for off-season planning:



Turfgrass Transition Cycle



Conclusion

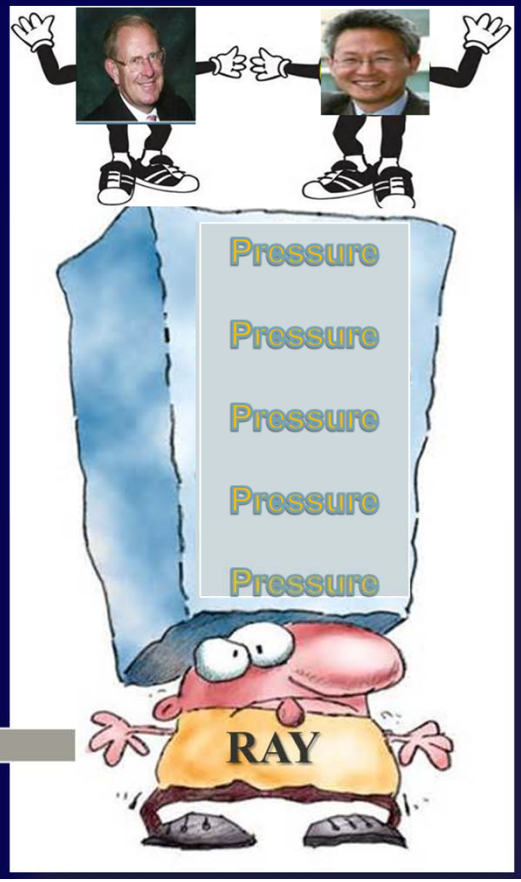
We need to do all this:

- Provide a constant, safe, limited track bias surfaces for horse training and racing and
- Fulfill the world class racing standard expected

Question??

How do I cope with the bosses expectations?

- ANSWER!!



THANK YOU BOSS!!

Tracks Monitoring
Q & A