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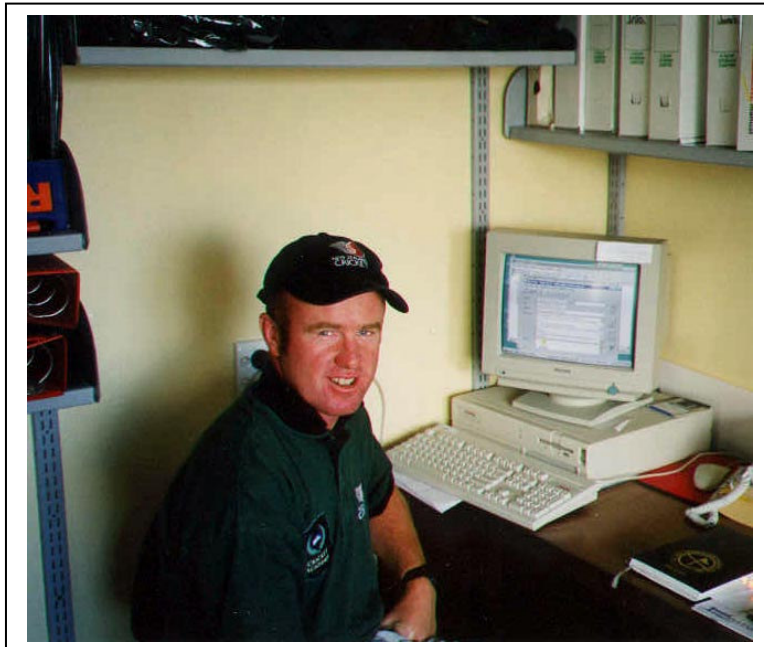
INTRODUCTION

Firstly I must introduce myself as Karl Johnson, former Turf Manager for New Zealand Cricket, and now Turf Manager at Westpac Park, Hamilton. I have been asked to compile this booklet to help with the preparation of school and club pitches and grounds in a manner that is easy to understand.

The biggest problem with any discussion on cricket pitch preparation is that each pitch is different. The type of pitch soil used is the key variable to consider, although the type of grass grown; the climate; the irrigation; and the rollers available are also important considerations.

It is generally acknowledged that the overriding consideration in pitch preparation is that the pitch should play evenly and consistently. If this is achieved then cricketers of all grades and standards can play an enjoyable and fair game of cricket. The quality of the pitch determines the quality of the match. Unlike many sports, cricket cannot be played satisfactorily on a substandard surface. Those persons responsible for cricket facilities should strive to use this booklet in a positive way to increase the knowledge of all those who are interested in improving the standards of pitches and grounds.

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ACKNOWLEDGEMENTS

I would like to take this opportunity to thank those who have provided me with the necessary information to produce this booklet as without their assistance this would have made my task more difficult to complete. In particular, I wish to express my appreciation to:

- π **The New Zealand Sports Turf Institute, especially Mr Bill Walmsley**
- π **Mr Ces Renwick, Auckland Cricket Association's Grounds Officer**
- π **Mr Stuart Cameron-Lee, ex-Turf Manager, Eden Park**

USEFUL CONTACTS

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New Zealand Sports Turf Institute

Keith McAuliffe
Director
PO Box 347
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There are also Sports Turf Consultants at the following regional offices of the New Zealand Sports Turf Institute:

Auckland

PO Box 12-462
Penrose
AUCKLAND
Tel: 09-634 4400
Fax: 09-634 4401

Hamilton
154 Rimu Street
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If you do not have a copy of 'The Laws of Cricket' or 'Code of Conduct – Standard Playing Conditions' please contact Brian Aldridge at New Zealand Cricket. These references give you information on pitch markings, covering pitches and pitch rolling procedures.

GROUNDSPERSONS SUMMARY CALENDAR FOR TURF PITCHES

FEBRUARY

Record any features about the pitch that need improvement. Make plans for the autumn renovation including soil tests

MARCH-APRIL

Autumn renovation programme to be completed

APRIL-JUNE

Fertilise to keep grass growing, regular mowing, preventative disease control, worm control, machinery maintenance, pitch soil preparation for upcoming work

AUGUST

Reduce mowing height, mow two to three times per week, check levels and base compaction, prepare for early season rolling prior to spring renovation, fertilise

SEPTEMBER

Complete spring renovation, assess rolling requirements by checking core samples, weed spray if required

OCTOBER-MARCH

Match preparation, regular checks for grass grub and disease, fertilise to keep grass healthy, watering to ensure grass does not get under stress

AUTUMN RENOVATION OF CRICKET PITCHES

Stuart Cameron-Lee and Ces Renwick

Autumn renovation is a key aspect of the year round pitch management programme. Decisions made and action taken at this time will dictate the quality of the playing conditions the following season.

GETTING STARTED

Firstly a thorough visual assessment must be made of the soil profile of each pitch bearing in mind any problems experienced during the proceeding cricket season *eg* poor base compaction, excessive cracking or soil layering. Removal of soil cores or digging a hole with a spade to at least 100mm will enable a study of the soil profile to be made.

A survey of the soil profile is essential to identify:

1. **The presence of any soil layering caused by incorrect rolling or questionable spring renovation procedures**
2. **The development of a thatch or organic matter build up in the surface soil layer**
3. **The presence of anaerobic soil conditions at depth**

Early signs of anaerobic soil include the orange streaks of iron mottling and the stale smell caused by poor soil aeration during soil biological processes. A highly compacted pitch soil with poor drainage may require more intensive physical treatment (to a minimum depth of 100mm) and even reconstruction with free draining material (sand or crushed scoria) and followed by relaying pitch soil.

CHOICE OF ACTION

The type and extent of autumn renovation is dictated by:

1. **Winter ground use requirements**
2. **Condition of the pitch following summer use**
3. **Budget, machinery and labour constraints**

A. The Quick Fix

Where the period between winter and summer sport is very short, and pitches are on winter sports fields, a quick fix rather than full renovation may be the best option.

Such a renovation could include grooving to a) remove surface thatch and b) form a seedbed on bare patches. Any depressions should be filled with wicket soil to prevent water ponding on the pitch during winter. Sowing with a turf type ryegrass will ensure re-establishment of grass cover and a quick turn-around between the summer and winter codes. It must be stressed however, that this is simply a patch up option and problems with poor grass cover and drainage may be experienced later in the winter.

B. Full Renovation

The grass cover will be lost in most instances on poor and uneven areas because of soil compaction from frequent rolling (a situation common of the average club square used from week to week) it is essential to undertake a more extensive renovation.

Without relief of soil compaction, water, air and root movement through the soil will be reduced and the opportunity for the successful establishment of a healthy, deeply rooted grass cover to be carried through to the spring renovation is significantly lower. Certainly if problems of soil layering, shallow grass rooting or poor drainage have become evident during summer pitch preparation there is no option but to embark on an extensive renovation programme.

PROCEDURE FOR AUTUMN RENOVATION

- 1. The renovation programme must aim at creating a seedbed at least 50mm deep. A seedbed depth of 50mm will assist rapid root development while retaining base compaction**
- 2. A hard post summer soil surface can be most effectively broken by the use of fixed tine harrows or a tractor mounted groover**
- 3. The depth of cultivation must be below the deepest thatch layer or until the uncultivated soil surface is clean (free of excess root material)**
- 4. Repeated use of the cultivating implement will bring the organic matter and plant material to the surface where it can be raked off**
- 5. Further cultivation will break up the pitch soil to the stage where a hand operated groover can be successfully used**
- 6. When this stage is reached a groover set up with 1.5mm wide blades at 12mm spacings (as for spring renovation) can be readily used to create fine tilth for the seedbed**



7. **A clay loam pitch soil (non-swelling type) similar to that already present on the pitch can then be incorporated into the existing soil**
8. **Place the soil in a light layer on the existing soil and groove to below the two soils. Follow this grooving with use of a light roller to consolidate the soil surface**
9. **Ensure each consolidated layer is grooved prior to placement of the next layer to prevent interface or layering development**
10. **The number of layers of new soil is determined by the need only to replace what has been lost or is required to correct levels**
11. **Incorporate 100 g/sq. metre lime and 30 g/sq metre superphosphate into the final soil layer and work in well**
12. **Dress off the surface to true levels ensuring soil aggregates are not larger than a dried pea. (Do not rely on topdressing after establishment to rectify smoothness and level problems). Repeated grooving, rolling and raking will ensure the surface finishes up firm and level**
13. **Broadcast a turf type ryegrass at 20 g/sq. metre twice in a rake-seed-brush-roll sequence (total 40 g/sq. metre). Cover with a windbreak cloth (max 70 percent shade factor) to protect against rainfall washout and birds and help retain a moist soil surface for rapid germination**
14. **Coated seed is more expensive (approximately \$2.00/kilo) but well worth the additional cost. It provides initial protection against pests and disease and stimulates initial growth following germination**
15. **Irrigate regularly with a fine spray. The soil surface should never be allowed to dry out**
16. **Repair and re-seed weak or damaged areas as they become evident**
17. **Begin regular mowing at 20mm grass height progressively reducing to 12mm winter maintenance height**
18. **First cut should be carried out when the soil surface is dry and a very light roll prior to cutting will prevent scalping. The first cut is often best carried out with a lightweight rotary mower**
19. **Mow regularly (minimum two times a week) and never let grass grow long**
20. **Apply fertiliser [eg. turf extra (16-0-16 NPK) at a rate of 10-20 g/sq. metre at 2-3 week intervals over the winter]**
21. **Begin light rolling three months after establishment to develop and maintain surface smoothness. Any low patches can be filled gradually with fine wicket soil well worked into the grass cover (1kg/sq. metre)**
22. **Apply Miral at label rates to give residual insect protection and be alert for outbreaks of fungal disease**
23. **Algal slime can be controlled by regular spraying with a Thiram/Mane Mix by using Kleensan (replacement for Dinanin A) at label rates. More extensive control of an existing slime layer of moss build-up can be achieved through use of Mostox at label rates**
24. **Spring rolling should commence in late August (refer spring programme – rolling concepts)**

VIBRAMOLING

In recent years there has been considerable debate over the use of vibramoles or subaerating machines in cricket pitches.

The theory of this application is that the shattering action of the implement will alleviate soil compaction by creating tension cracks through the soil. Use of vibramoles may however cause more harm than good, particularly if timing is incorrect (ie. wrong soil moisture content). In addition, base compaction may be lost and it may be difficult to achieve an even base compaction the following season. Vibramoling lines may also reappear and open during pitch preparation (especially with swelling type soil) the following season. Reopening of these lines maybe minimised by grooving thoroughly after vibramoling.

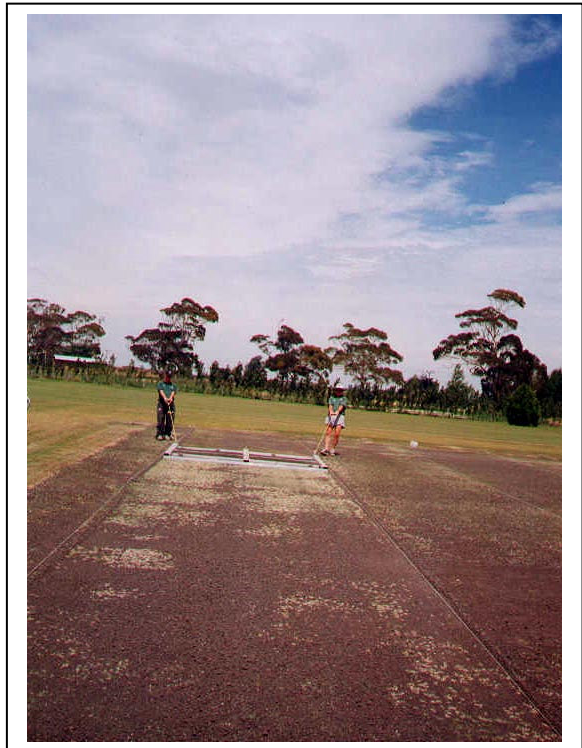
While the use of vibramoles should not be discounted and is being used successfully at some venues, cultivation to a minimum depth of 50mm should provide sufficient compaction relief to assist deep rooting and the development of a healthy grass cover.

CONCLUSION SUMMARY

Autumn renovation aims to create the optimum soil condition for establishment of new grass. By using this procedure outlined it is possible to obtain a healthy deeply rooted grass cover without sacrificing base compaction.

SPRING RENOVATION

1. Ensure winter or early spring rolling has achieved adequate base compaction and the pitch feels firm to walk on. To check compaction take a 100mm core and inspect to make sure a good firm base – 50–100mm area is present. If this is not present, roll with a fairly heavy roller when the top is dry. Check core again
2. If exposed to winter sport, the cutting height should be gradually reduced to 12-15mm. This will assist sunlight penetration and surface drying and reduce the tuftiness of grass plants
3. Immediately prior to spring renovation, the grass height should be reduced to 10mm
4. A groover with 1.5mm wide verticutting blades placed 12mm apart should be set up so that the blades are just touching and breaking the soil surface. Verticutting should proceed in more than one direction and be sufficient to create a clean soil surface for the binding of topdressing soil. While reducing turf density through the removal of dead fibrous material at the soil surface, verticutting should not remove the existing grass cover
5. Prior to topdressing a rotary mower can be used to suck up all loose plant material and organic matter leaving a clean surface upon which to add soil
6. Topdressing soil (aggregates less than 4mm diameter) may then be added at a rate of 1kg/sq.m and worked into the existing soil along with superphosphate (30g/m sq.). Care must be taken to ensure a 'cake layer' of old and new soil does not result. This often develops through insufficient grooving
7. Establish surface levels adding soil as required. It is important to work this soil well into the existing soil and grass cover. Verticutting should knock off high spots. Try not to rely on topdressing after grass establishment to rectify smoothness and level problems. Great care should be taken at this stage to ensure that an even surface with no undulations is achieved
8. Seed with turf type ryegrass eg. Allstar (20/1m sq.) and groove and rake in well. The seed should be applied before the soil is put on
9. Recheck surface levels



10. To assist existing grass apply urea at 2kg/75 sq. m
11. Cover with shade cloth to slow surface drying and accelerate seed germination. Prevention of rapid surface soil drying is particularly important for germination of coated seed (frequent light irrigation may also be required)
12. Shade cloth should be removed soon after seed germination and left in place no longer than 7 days or turf may be weakened

POST RENOVATION MANAGEMENT

1. Upon removal of shade cloth, re-seed and repair weak or damaged areas
2. Begin regular mowing (minimum twice per week) at 20 mm and reduce to 15mm once tillering has begun
3. Regular mowing with a reel mower will also provide initial surface consideration and develop and maintain surface smoothness
4. Fertilise with nitrogen/potassium fertiliser (1:1 ratio) as required eg.14 day intervals at 30 g/ m. sq. to stimulate healthy grass growth
5. Once grass has matured, begin light rolling (500kg) increasing roller mass as compaction increases. Early season rolling should begin the diagonal or crosswise direction
6. Be alert for signs of post emergence fungal disease and implement a preventative fungicide and algal slime spray control programme
7. Take soil cores at regular intervals to check movement of grass roots down the soil profile and rolling effectiveness

AUTUMN RENOVATION OF PITCHES IN THE SPRING

Where pitches have been exposed to winter use in poor weather conditions and surface pugging has caused a significant loss of grass cover and upheaval of surface levels, it may be necessary to implement a more extensive renovation programme.

An autumn type renovation programme will aim to create a seedbed at least 35-50mm deep for the establishment of a completely new grass cover. This type of cultivation is initially most effectively achieved through use of fixed tine harrows, which break up the surface soil layer and incorporate topdressing soil. Repeated use of harrows will also bring organic matter and old plant material to the surface where it can be raked off to leave clean soil profile. Further cultivation by grooving will create a fine tilth for preparation of a seedbed and assist reinstatement of surface levels. Extra care must be taken to ensure levels are accurate and this can be achieved by a repeated topdressing/grooving/rolling/raking sequence. The use of levelling aids could be of particular value in producing a flat surface free of undulations.

Check cores for case compaction before grooving or harrowing. To compact the base a fairly heavy rolling may be given before working on the surface area. This procedure could help the grass early season.

Use of an autumn type renovation programme in the spring does have a number of disadvantages including:

1. **Differential soil settling may result in loss of levels particularly once rolling has begun. Unless repeated post renovation soil topdressing is carried out, surface irregularities may develop causing inconsistent bounce and pace. The rolling raking process at the seeking stage will minimise future problems**
2. **Immature grass plants are given very little time to develop an extensive, deep root system. The grass cover may therefore fail to cope with the extraordinary stresses associated with pitch preparation. This could lead to premature grass death, eg in response to tolling and poor post match recovery creating problems for repeated pitch use. Shallow grass rooting will also inhibit uniform removal of water from the pitch soil to depth making preparation of hard, fast pitches more difficult**
3. **Great care needs to be taken to give the grass every chance to become established and to achieve a firm surface base should be taken not to roll the surface unless it is fairly dry and follow by watering grass should be two or three times weekly. Never let it get long**

SUMMARY

To assist quick turn around of pitches in the spring, it is therefore desirable to ensure:

1. **Autumn renovation is carried out correctly**
2. **Every effort is made to maintain a good grass cover and level surface during the winter months**
3. **That spring renovation concentrated on repairing winter damage, maintaining and increasing grass density and re-establishing a level surface free of undulations**

ROLLING CONCEPTS

Early Season = Base Compaction

Ces Renwick

Very early each season we must decide on the rolling or compaction needs of the blocks. What we decide on and how well we carry it out will determine, to a major degree, the performance of our wickets for the season. What we need to start the season with is a good grass cover, good compaction and level surface. The base below 50mm should be firm.

ROLLING

What I want to do in this paper is try and cover the aspects of rolling. I probably get asked more about this than anything else. How long do I roll? What sort of roller? When do I roll? Some misconceptions. This must be done in the renovation or laying of the block. More harm is done by excessive rolling than not enough. Rolling should not be done in very wet or dry conditions. I cannot say exactly that you use any particular roller, as you really have to do the best job with the one you have.

WINTER ROLLING

Regular mowing with a reel mower gives about the right compaction needed and helps the grass. Remember take care of the grass. Blocks should feel firm to walk on. Taking cores can give you a good look at the condition of your block. Even compaction is required and a good grass cover deep rooted.

PRE SEASON ROLLING

We need to understand the benefits from early season rolling. This should be planned for in late August or early September before spring renovation on the autumn sown blocks. The surface needs to be reasonably dry. Rolling with a fairly light roller when the wicket soil is soft below the surface will allow compaction in that area. The actual weight of the roller you will need to judge. Err on the light side, as the surface must not be sealed. When you choose the time allow the surface to dry for two or three days and mow the grass to 10-12mm. No matt of grass should be present. Good upright growing grass. Make sure the surface is properly dry before rolling. A light roller is essential for the first part.

Some ridges at the edge of the roller will probably show. These should get smaller as the rolling pattern proceeds. Do not over roll. The pattern should be length wise, cross ways, corner to corner and finish length side. Stop rolling if at any stage the surface shows real dampness. Wait for it to dry and start again. One or two passes at each stage to start with. Do not over roll and damage the grass. Make sure the roller keeps a dry look.

You can take cores to check down to 100mm deep before commencing rolling on the compaction levels present. These should be repeated to check on compaction changes at the finish. Cores should feel much firmer particularly at the lower levels.

After rolling watch the surface as the roller passes. If there is little noticeable downward movement you may have achieved the compaction required. Test. As soon as you have finished, water must be applied. Follow this when the surface is dry by the spring renovation. This is the time to correct any surface levels. The rolling process could if tests show the need, be repeated about 10 days before the wicket is used.

These processes will give you a good looking block firm to depth. Base your fertiliser programme to ensure grass is well fed.

The benefits of spring rolling will save many hours of rolling during the season. Rolling is based on a compromise to keep grass alive and get the firmest wicket possible.

SPRING (HEAVY RENOVATION) WINTER SPORT

A roll to compact the lower part can be given before starting getting the surface ready for seeding. This will help to give the new grass a longer period before major rolling. This rolling will also assist to get levels right. The groover will also help the process to improve levels on a firmer base.

WATERING

To achieve compaction wicket soils must have the level of moisture that allows the soil particles to slip together. When the soil is too wet this does not really happen. When too dry moisture levels with rolling can cause serious layering, damage the grass and cause uneven pace. Your judgement and observation will provide the basis for your particular rolling results and moisture levels used.

| | |
|-----------------------|----------------------|
| Lighter roller | up to 500kg |
| Medium | 500 – 1500 kg |
| Medium/Heavy | 1500 – 2500kg |
| Heavy | 2500 – 3500kg |
| Very Heavy | 3500kg plus |

TIMETABLE

Make this out early for each block and plan exactly what you intend to do. Assess your roller needs and restraints. Remember good base compaction is only achieved before the surface becomes hard. A hard surface area acts as a bridge and stops the roller affecting to any real degree the base.

OBJECTIVES

To achieve an evenly compacted block to at least 75mm deep with a good grass cover. Wickets for multiple days play needs 100mm.

A level surface is essential. Understanding of moisture relationships to achieve compaction.

POINTS TO SUMMARISE

- 1. Study the condition of the block by taking cores**
- 2. Ensure levels are good**
- 3. Get good base compaction early**
- 4. Learn how to determine how effective rolling is practiced**
- 5. Look after the grass**
- 6. Work to a programme of target dates for the best results possible**
- 7. Good watering procedures enhance rolling**

THE WEEK TO WEEK PROGRAMME

Prepared and revised by Ces Renwick

The following procedure is suggested as a weekly programme to assist week to week wicket preparation. These suggestions have proven to be successful.

Many variations to these points can however be used but we are judged on what the end result is.

Most blocks used from Saturday to Saturday are of three to four wickets wide. Reference should be made to papers available on Spring and Autumn Renovation. Particular attention should be given to the paper on rolling.

It is appreciated that the groundsman himself is the person who knows his ground and conditions best, and that variations from these recommendations may still produce first class wickets.

WEEKLY PROGRAMME

Monday

Patch all badly worn areas with sieved soil. A dry roll is desirable, to ensure patching adequate. Thorough watering is then essential. This is the major watering for the week. Make sure full wicket block is done.

Note:

Before patching remove all loose grass. Loose soil can be swept into cracks. Use new soil for badly worn parts. Watering correctly at this stage keeps grass growing. See detailed notes on patching and watering.

Tuesday

Complete repairs not done on Monday. Any manuring which is required can be done but must be watered in. Work on new areas can proceed.

Note:

Repairs and watering should be completed very early each week.

Wednesday

Check effectiveness of patching and watering. Check new wicket areas for progress. Ensure wickets are evenly watered. Work on wickets for future use.

Thursday

Wicket preparation for Saturday should commence. If the surface is dry give a hand watering. Surface should be damp before rolling. This will ensure compaction. Patched areas can be covered with grass clippings or hessian. The roller should look damp when rolling starts. As soon as you feel your surface is compacted and the roller is dry to look at cease rolling. If hessian is used, remove and roll while some moisture is present. A few clippings will help the wicket appearance. The time you roll is up to you. When a roller makes no noticeable movement on the wicket surface you can feel you have finished. See paper on rolling.

- π **Check all patching. Ensure firmly compacted**
- π **How successful your preparation is, is determined on Thursday**
- π **By the afternoon the surface should be firm and compacted looking**
- π **Premier wickets should be covered**

Friday

Light sweep - remove loose clippings. Mown - grass should be 8-10 mm.
Brief roll - more if still damp.

Note:

Wicket should be reasonably dry in the morning and fully dry by the end of the day. Mark if not able to do on Saturday. Premier wickets must be covered as late as possible in the day. Place hessian under the cover to prevent sweat spots.

Saturday

- π **Sweep and mow if not done on Friday**
- π **Roll briefly to shine the surface. Mark**
- π **During final preparation try and present a neat and tidy area**
- π **No holes in the ground around pitch area**
- π **Neatly cut grass**
- π **Clear markings**

**‘Presentation is the icing
on the cake’**



POINTS TO HELP

PATCHING

Firstly I though I would give a procedure I have used for repairing ends for club play. I believe it is desirable to make repairs before watering so that soil kicked out can be swept off the wicket area. Another important reason is to try and stop leaching of fine clay from the surface and leaving the gritty bits on the surface. This forms a layering effect and makes the binding of new soil difficult. If by restriction of time you have to water make sure the surface is swept with a stiff yard broom very firmly.

I like to sweep all the loose particles into a heap clear of worn areas ready to re-use. Damaged and loose grass should be swept off the wicket. With all foot holes swept clean I add new sieved soil to fill the areas. This is rammed or banged in with the back of the shovel. I then put back with the broom the sweepings over the top. Any grass or surplus can be swept away behind the stumps. Patched holes should be a bit higher to allow for compaction. This procedure should take about 30 minutes per wicket. Then get your water on the whole wicket trying not to get too much too quickly and cause washouts. Some have suggested a dry roll on the ends. Well okay, if time permits.

After the watering has dried off and you are ready to start the next preparation, check how good the job is done. Tidy up and fill low patches. This is when a roll is needed. There will be enough moisture in the base area to allow compaction and the top dry enough to roll.

When your main preparation begins on Thursday for Saturday play, I give the wicket an even hand watering and cover all the bare parts with grass clipping saved from mowing the rest of the block. This should be a light layer. Cover with hessian if you have it and roll while the top is still damp. Using hessian means less clippings and you can roll a bit damper. When you take the hessian and sweep the clippings off you will see how good your patching is. You will need to ensure you have enough water to get a smooth surface compacted together. If not sure add more water and repeat process. If you have the surface overdried at this stage the surface will not bind.

The bare parts will dry quicker on the surface than the grass covered area so put clipping on the bare parts to slow drying.

A few points to remember:

Fill ball marks on the pitch by hand with just enough soil to fill the damage. Do not put soil on any grass covered area.

Use just enough soil to fill the damaged areas. Worn patches when repaired should be very hard. Make sure they are or they will kick out very quickly. Keep the ends a little damper than the wicket area. If cracks are a concern fill and damp again before rolling.

GENERAL CARE

WATERING

This is also a procedure that is most important and essential to turf vigour particularly during the drier months. Water applied as light sprinklings merely wets the surface and will almost certainly be lost in evaporation with the result that grass roots are encouraged to remain in the top area where the food supply is restricted and the root system loses any binding effect.

Therefore sprinklers should be left going until water seepage penetrates deep into the soil. Roots are then encouraged to follow water down to where they have a much wider horizon in which to feed and if water supplies are restricted such deeper rooted turf has a much better chance of survival. To achieve uniformity of coverage and to avoid any dry patches within the area it is necessary to maintain a satisfactory overlap of the sprinklers. It is therefore essential to space the sprinklers correctly. Square, rectangular or triangular patterns may be used, the latter providing the most efficient coverage.

Fine spray sprinklers are necessary to prevent any soil being washed away.

GROWTH CONTROL

Manuring depends on the growth of the grass but it must maintain a healthy look and in general it is advisable to apply manures every 4 to 6 weeks during the playing season.

Application of manure can result in burning and it is therefore advisable to apply it on a dull day and to water it in immediately taking care not to saturate the area as this will only wash away the fertiliser. Application during light rain is ideal.

The constant removal of the grass clippings inevitably causes a deficiency in potash and this fertiliser should be included in the balanced mix used. Light and regular applications should be part of the programme.

DISEASE CONTROL

At certain times throughout the year, there are several diseases, which will attack grasses and cause damage in varying degrees. Although some of the diseases cause great disfigurement in the pitches it is seldom that the grasses are actually killed. Fairly effective treatments to check most diseases have been devised but identification of the diseases and the treatment necessary often needs experience and equipment not always possessed by ground persons. In such cases advice should be sought from Turf Authorities.

MOWING

The block should be mown at least once a week during the season. Mowers should cut cleanly. A comb should be used to ensure all grass is upright growing and a mat can not be formed.

Set the comb to just touch the soil.



ROTATION

Most blocks being three to four wickets wide requires a careful rotation programme to ensure the best possible grass cover is maintained. The first wicket used should be decided on quite early in the season. This should be at the side of the block so that the bowlers run off does less damage when the block is soft. This strip would have more rolling than the balance of the block. The next strip should be one away from the one used.

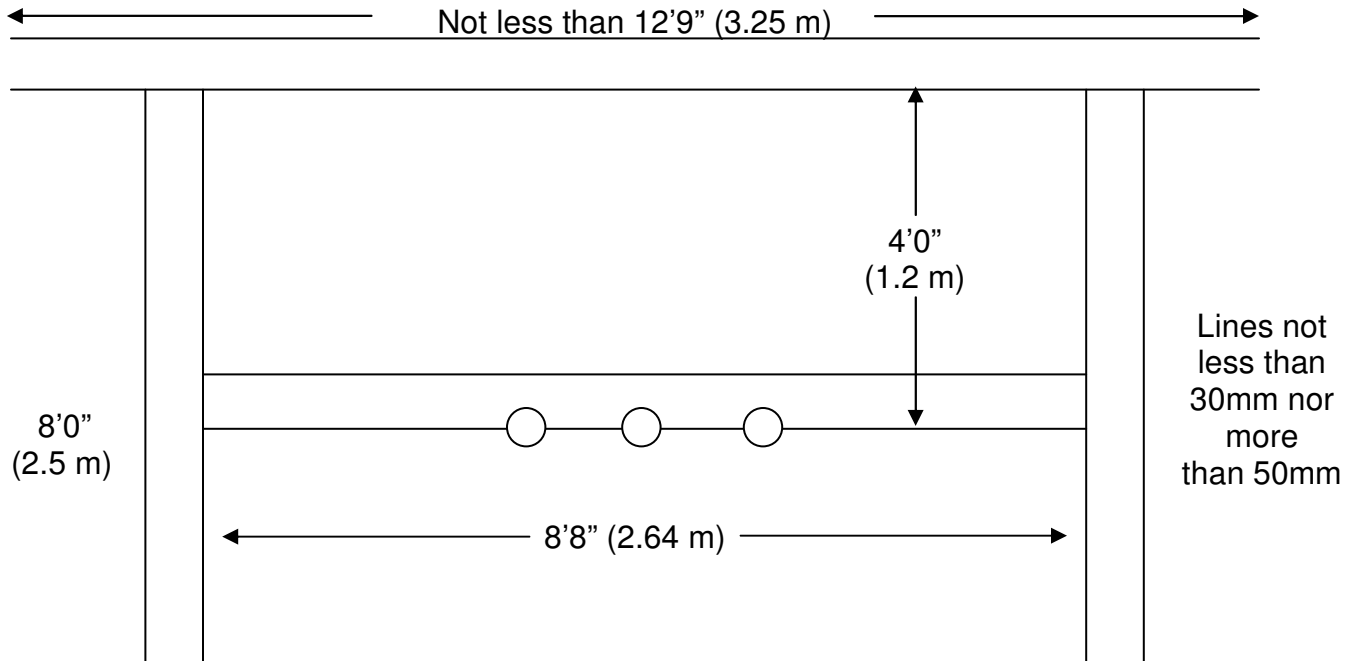
Unused strips should be kept for the second half of the season where possible. Use a wicket early season absolutely as long as possible unless you have had success with in season renovation. Plan the usage on a seasonable basis. The relationship between week to week good attention and rotation will determine success.

CONCLUSION

This information has been prepared to assist cricket administrators and ground authorities to provide and prepare better wickets.

The recommendations are intended as a general guide and if followed will produce improvements in most cases.

APPENDIX A - PITCH MARKING

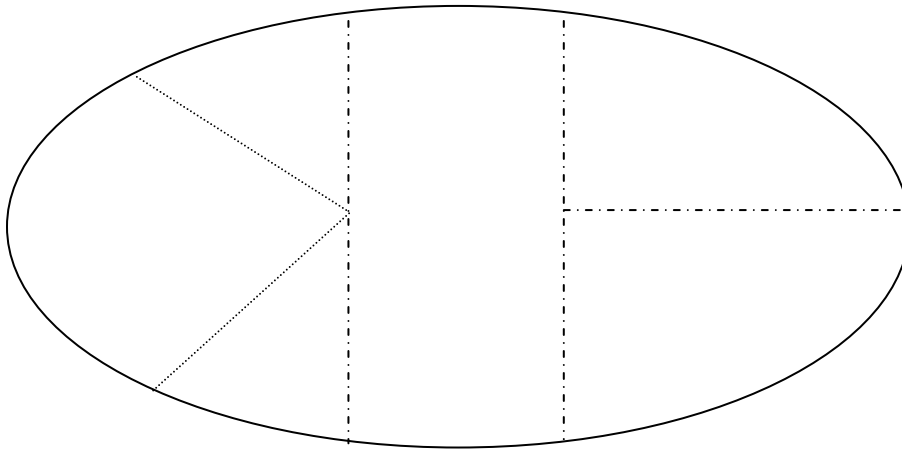


NOTE:

- a) Length of pitch centre stump to centre stump = 66 feet (20.12)

b) Centre of stumps on bowler's approach edge of crease mark

Markings can be done with a cheap plastic paint with whitewash lime added



Boundaries should be marked to from an oval. Take lines from centre stump at each end. Boundaries to be as large as the layout of the ground permits

APPENDIX B - HOW TO ASSESS THE WEIGHT CAPACITY OF A WATER FILLED STEEL BARREL TYPE ROLLER

Roller

Procedure

Formula:

$$\begin{aligned} \pi r^2 \times L \text{ where } \pi &= 3.14 \\ r^2 &= \text{the diameter} \times 0.5 \times \text{the answer} \\ L &= \text{the length of the roller} \end{aligned}$$

| | | |
|--|---|---------------------|
| Measure the diameter of the roller (in metres) | = | A |
| Measure the length of the roller (in metres) | = | B |
| A x 0.5 | = | C |
| C x C | = | D |
| D x B x 3.14 | = | E |
| E x 1,000 | = | answer in kilograms |

Example for total roller weight

Roller 1.22 metres in diameter x 1.5 metres in length:

$$\begin{aligned} 1.22 \times 0.5 &= 0.61 \\ 0.61 \times 0.61 &= 0.372 \\ 0.372 \times 1.5 \times 3.14 &= 1.752 \\ 1.752 \times 1,000 &= 1,752 \text{ kilograms} \end{aligned}$$

Note

This measures water content only. The steel and any mounted motors need to be added to the total

Roller Effect

The comparative rolling factor = weight (kgs)

Length (metres) x Diameter (metres)

Example

For a roller weight of 254 kgs

Length - 0.915 metres

Diameter - 0.915 metres

The comparative rolling factor is

$$\frac{254}{0.915 \times 0.915} = 303.38 \text{ kg/m}^2$$

By this method, it is possible to compare (not measure) the rolling effect of any roller