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### Lawns - their establishment and management

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*Department of Agriculture*

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# LAWNS

## *Their Establishment and Management*

By H. G. ELLIOTT, Dip. Agric., Assistant Superintendent of Dairying

**I**T may be said that there is nothing more pleasing to the eye than a well kept lawn, be it in a home garden or covering a sporting area, and under Western Australian conditions there is no reason why a good lawn or turf cannot be developed and maintained—always provided that there is a sufficiency of water and proper care and attention are available.

Three major factors control the production of good lawns and these are climate, soil and management. Each of these factors is responsible for a whole series of direct effects upon the growth and quality of the turf grasses.

The growing and maintaining of a good turf on playing areas implies not only a thorough knowledge of the relationship and response of grass to the environment and the way in which it is handled but also an ability to adjust such knowledge to the demands of play—which unfortunately are directly opposite to what is best for the grass. For example, compacting the area by implements and play under unfavourable conditions, close cutting, scarring and damage by players may necessitate wide modifications of maintenance practices to compensate for their injurious effects.

### CLIMATE

The conditions generally in this State are those of winter incident rainfall with summer drought, consequently in most areas where a turf or lawn is grown, irrigation during the summer months is necessary.

Temperature and moisture are the major climatic factors controlling species adaptation. Temperature is the most important factor, for generally sufficient moisture can be supplied by irrigation to maintain a satis-

factory turf even in the driest areas. Consequently buffalo or couch grasses will and do produce an excellent lawn or turf in the South West with irrigation. Kikuyu, Kentucky blue and bent grasses are also used under certain conditions.

### SOIL

As we can control climatic conditions to a very limited extent only, the relationship of soil to the growing grass assumes major importance. These soil conditions may and can be modified or altered to an extent that will make them suitable for turf production. For instance fertiliser applications will make certain nutrients available; acidity can be corrected by lime applications, while drainage, cultivation and the use of organic materials improve the physical conditions of the soil. Soil moisture is increased by watering. The addition of good loam to sand or vice versa will improve the soil texture, and effective aeration may be ensured by the use of suitable implements.

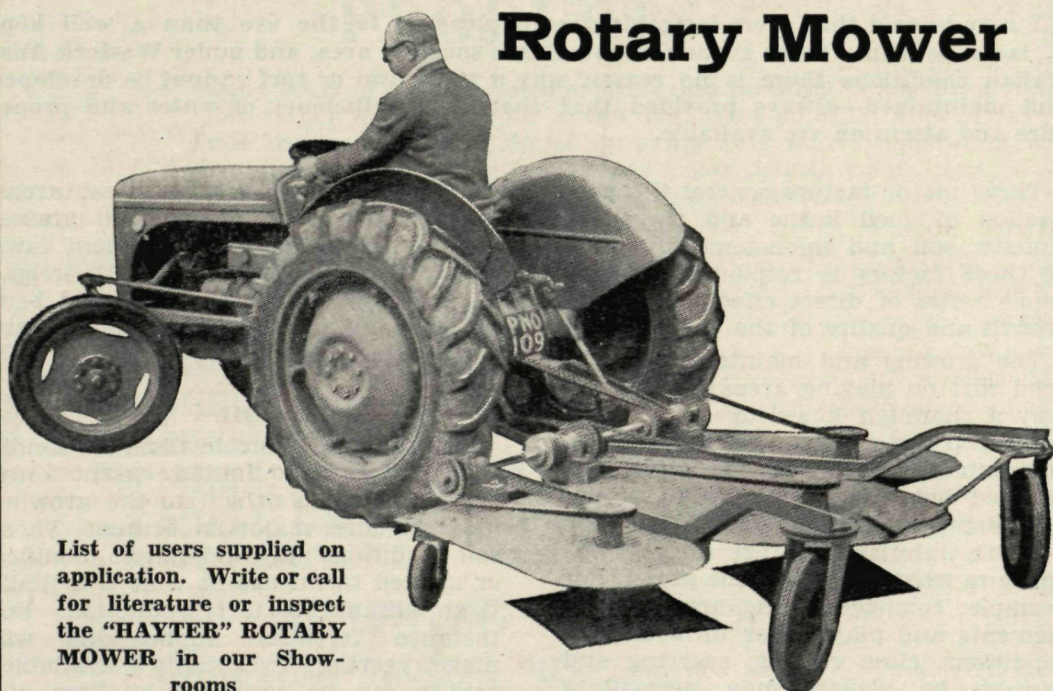
It can be said that the most satisfactory conditions for all species of turf grasses are fertile soils that are permeable and well-drained yet of good water-holding capacity where the roots function. However, if the correct choice of a grass is made, a good lawn or turf can be produced under a wide range



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of conditions as most difficulties and deficiencies can be overcome by correct treatment.

### MANAGEMENT

This covers establishment, maintenance and renovation. Good management consists of a thorough knowledge and application of planting, clipping, fertilising, watering, rolling, aerating, topdressing, etc. The production of a good lawn or playing turf is a practical job, but to provide the answers to the many problems which must occur, much research work must be carried out and the knowledge already gained passed on to those most vitally interested.

### BASIC SOIL FACTORS NECESSARY FOR GOOD LAWNS

These factors can be listed as follows:—

1. Well-prepared seed bed. This is essential for all grasses. The seed bed should be firm and fine in texture.
2. The soil should be well-drained and not excessively compacted. This to allow good aeration, as grass roots need air for healthy vigorous growth.
3. The ground should have a good moisture-holding capacity even where irrigation is practised, as excessive drying-out must be avoided.
4. The fertility of the soil must be adequate as it must supply plant food throughout the year. Adequate fertility and an efficient fertilising programme must be maintained for the grass requirements.
5. Freedom from harmful chemicals in the soil is necessary. Salt, and any form of high acidity or alkalinity must be corrected if good turf is to be produced.

### FERTILISERS

Correct fertilising is one of the most important factors in turf management. The maintenance of a good turf means adequate feeding without interruption during the whole of the time it is growing, and under our climatic conditions

this can be for 12 months. To maintain a successful feeding programme for lawns it is necessary to understand fertiliser materials and grass requirements.

Fertilisers contain one or more of the three most important elements, nitrogen, phosphorus and potassium. These are not in pure forms but in chemical compounds combined with other elements. They may be natural, manufactured, or produced as by-products and they are classified as organic or inorganic.

Inorganic or chemical fertilisers in general are highly soluble and quickly available. It has been found that for lawns generally, a fertiliser mixture consisting of—

7 parts by weight sulphate of ammonia,

4 parts by weight superphosphate (22%),

1 part by weight muriate of potash, is an excellent one but some people like to use some organic fertiliser with the chemical one and for this purpose the following gives the same nitrogen, phosphorus and potash content—

3 parts by weight blood and bone.

6 parts by weight sulphate of ammonia.

2 parts by weight superphosphate (22%).

1 part by weight muriate of potash.

Generally, for best results, these fertiliser mixtures can be used at 3 oz. per square yard per year, but for preference three or four applications of three-quarters to one ounce per square yard should be applied.

Fertiliser firms do put up fertiliser mixtures which are usually prepared for certain agricultural crops but the special mixtures for lawns or turfs are limited, as generally there is a vast difference in the requirements of a lawn or turf. For example an oval and a golf green would require different treatments. On golf greens the management is intensive, as quick and constant growth is required. Apart from this,



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greens have different types of grasses to ovals—grasses chosen in each case for their specific purposes—therefore, they require fertiliser mixtures to meet the feeding requirements of the individual grasses. For example, couch and creeping bent require constant and liberal supplies of quickly-available nitrogen but Chewings fescue will do well on limited amounts. The recommended complete fertiliser mixture for a creeping bent green on a golf course in this State is as follows:—

- 3 parts by weight of sulphate of ammonia,
- 1 part by weight of superphosphate,
- 1 part by weight of muriate of potash,

or if an organic fertiliser is required with the chemical, blood and bone could be incorporated and the following mixture used:—

- 12 parts by weight blood and bone.
- 34 parts by weight sulphate of ammonia.
- 6 parts by weight superphosphate.
- 13 parts by weight muriate of potash.

Either of these mixtures to be applied to the greens at the rate of  $\frac{1}{2}$  oz. per square yard per month. This is equivalent to 16 cwt. of the mixture per acre per year.

## LIME

Soil acidity or alkalinity directly affects the health and vigour of lawn grasses and can also, owing to its influence on the availability of plant foods, indirectly affect growth. Periodic applications of lime based on pH tests is the best way to avoid excessive acidity, but as a general rule home lawns do not require much attention in this respect. On those areas where it is required, the best time for the application of lime is in the late autumn or winter months.

## HOME LAWNS

In this State home lawns consist mainly of buffalo grass but some people use couch and a few kikuyu grass. Ow-

ing to the long summer drought period which occurs the use of other lawn species such as the bents, fescues, and blue grasses is limited. Apart from the climatic conditions much more attention is necessary to maintain the last mentioned as they are more exacting in their soil requirements and need specialised fertilising and the control of weeds, insects, and fungus pests is essential.

In order to obtain a good home lawn the following needs to be carried out when establishing—

1. **Soil Preparation.**—The area shall be well cultivated to a depth of 4 in. to 6 in., freed of weeds, levelled and compacted with a fine surface tilth.

2. **Fertilisation.**—Before planting, the whole area should be fertilised at the rate of 2 oz. per square yard with the following mixture—

- 3 parts by weight blood and bone.
- 2 parts by weight superphosphate.
- 1 part by weight muriate of potash.

This mixture should be worked well into the top 3 in. of the soil.

3. **Planting.**—Runners or rooted cuttings of buffalo or couch grass should be planted in rows 6 in. apart with 3-4 in. between sets. If desired couch grass seed can be planted in the late spring, summer or early autumn months. When planting by seed it is necessary to have a very fine surface soil tilth, which has been well watered prior to seeding. Mix the seed with at least six times its bulk of sand or white sawdust and sow both ways over the area to ensure that a good uniform cover is obtained. The usual rate of seed sowing is in the vicinity of one-fifth to one-quarter of an ounce of seed per square yard. After sowing it is essential, without overwatering, to ensure that the surface of the ground is kept moist. Light hand-watering night and morning with a fine-nozzled spray is recommended for this work.

4. **Maintenance.**—Once the area is reasonably well covered with grass runners it is necessary to lightly roll the area and then cut with the mower set high. Following these operations apply



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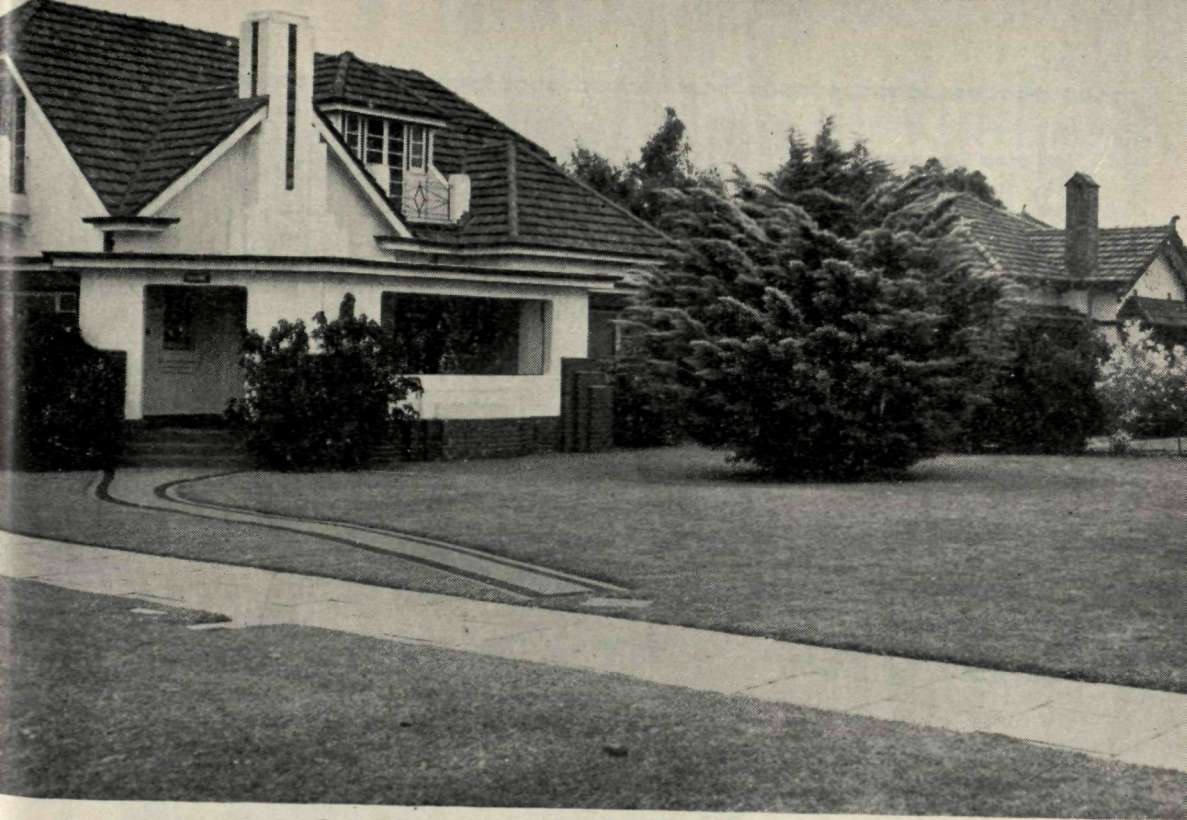
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another application of fertiliser but this time using a mixture of—

7 parts by weight of sulphate of ammonia,

4 parts by weight superphosphate,

1 part by weight muriate of potash,

at the rate of 1 to  $1\frac{1}{2}$  oz. per square yard and, after applying, top dress with clean sand to lightly cover the runners and level the area.

From this time onwards watering, cutting, and if necessary, light rolling should be done at regular intervals for three to four months. Watering should be gradually limited to two applications per week if in the summer time. Fairly heavy applications of water should be given at each watering.

**General.**—Once the lawn is established it is necessary to maintain efficient watering during the summer months and while active growth occurs at this period of the year cutting should be

carried out regularly and closely. In the early autumn a good application of about  $2\frac{1}{2}$  oz. per square yard of the following fertiliser should be used—

4 parts by weight sulphate of ammonia.

2 parts by weight superphosphate.

1 part by weight muriate of potash.

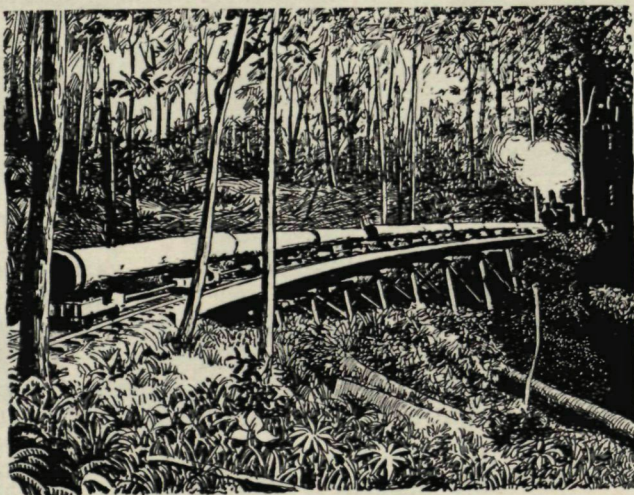
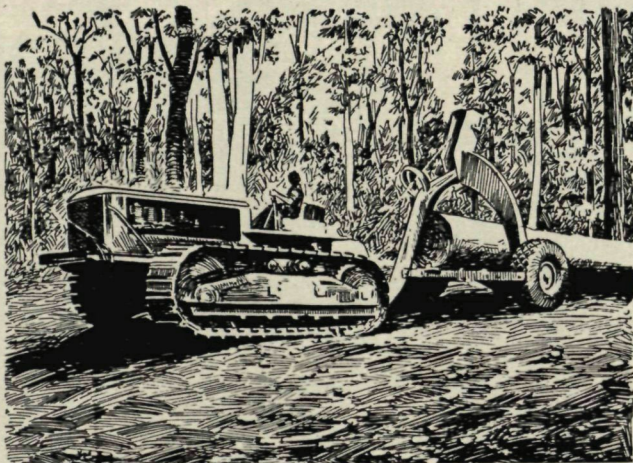
The period between cutting should be lengthened and the cutter bar lifted gradually until the spring months when closer cuttings can once again be made.

In the early spring, if the lawn is uneven, it can be levelled by giving a light sanding. Heavy blanketing of the area with sand is neither necessary nor desirable.

A further application of 1 oz. per square yard of the autumn fertiliser mixture can be applied to stimulate growth and, during the summer months at 6 to 8-weekly intervals, an application of  $\frac{1}{2}$  oz. per square yard of sulphate



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of ammonia will stimulate the lawn and maintain a pleasing colour in the grass.

**Weeds.**—Weeds in lawns are usually the result of inefficient management. If the turf grass is maintained at its maximum growth during the year, and more particularly in the autumn, very few weeds will be able to become established.

If, however, weeds such as clover, flatweed, etc. encroach on the area these can be treated with 2,4D hormone spray or dinox according to the makers' directions without harmful effect to the lawn.

Where heavy power mowers are used, rolling is not necessary, but if hand mowers are in use, rolling is advisable. This should be done two to three times a year and, if on sandy ground, after watering and cutting.

## TENNIS COURTS

Couch grass is the only grass which is used successfully as the main base for good courts in this State. Even then, if a good playing surface is to be maintained during the season, the maintenance and care of this grass is not simple as the surface of the court should be level, and the grass vigorous, but without blemish. Grass on a tennis court, for best results, must be well fertilised, cut, rolled, topdressed and watered.

**Soil.**—Most tennis courts in the Metropolitan Area are established on sand, and if good care and attention is given to the initial establishment of the area there is less likely to be major troubles later. Before planting, the area should be well worked to a depth of 6in. and a 2in. layer of good loam spread over the top. This loam should then be incorporated into the top 4in. of the sand with a rotary hoe or similar machine. When this has been done the area needs consolidating and watering, and finally it should have a fine loose tilth on the top  $\frac{1}{2}$ in. of the surface. Cuttings, roots or seed can be used to establish the couch over the

area. Prior to planting 3oz. per square yard of the following fertiliser should be incorporated—

- 3 parts by weight blood and bone.
- 2 parts by weight sulphate of ammonia.
- 1 part by weight muriate of potash.

Careful watering but not over-watering is necessary during establishment and after three months a further application of  $\frac{1}{2}$  to 1oz. per square yard of the following fertiliser mixture should be given—

- 7 parts by weight sulphate of ammonia.
- 4 parts by weight superphosphate.
- 1 part by weight muriate of potash.

If required, and good growth and cover is obtained light rolling should be carried out. To level the surface and cover the top runners a light topdressing of a mixture of sand and loam, three parts to one is to be given. Six to eight weeks later  $\frac{1}{2}$  to 1 oz. per square yard of sulphate of ammonia should be applied, and if required a further application at a similar interval is often beneficial.

The major fertilising should be given in the late summer or early autumn to stimulate growth during the winter months. This assists in reducing the incidence of weeds. A good general fertiliser for this time of the year is one made up as follows and applied at 3oz. per square yard—

- 3 parts by weight sulphate of ammonia.
- 1 part by weight superphosphate.
- 1 part by weight muriate of potash.

During the early spring a further  $1\frac{1}{2}$ oz. per square yard of this fertiliser should be applied and if necessary the area lightly topdressing with the 3:1 sand-loam mixture. Sulphate of ammonia should be used at the rate of 1oz. per square yard once or twice during the summer months as required to stimulate the grass.

**General Maintenance.**—Tennis courts at times have to stand up to a considerable amount of heavy play and



often abuse, more particularly when the courts are played on while damp or wet. The effects of this play bring about bare patches especially on the service lines and sometimes at the nets.

To avoid this the court area should be sufficiently wide and long enough to allow movement of the lines so that the same area is not used continuously and apart from this more care should be taken of the condition of the grass and soil of the courts before heavy and prolonged play takes place.

Where bad patches and bare areas occur these should be treated before they become too large. It is necessary to fork these areas to aerate the ground, fertilise and lace in good couch roots or runners and lightly topdress the areas with the standard topdressing mixture of sand and loam. It is essential that the same topdressing material be used in all operations at all times.

Every second year a liming of the whole area is advisable and the use of one bag of ground limestone per court is recommended. This should be applied in early July or mid-winter. Control of weeds by the use of weedicides should also take place during the recess periods.

Cutting should at all times be regular and the height of cutting altered according to seasons and growth. Close cuttings should only take place during the summer periods when the grass is most vigorous. It is essential to remove all grass clippings and to see that the mower is in first-class condition, as bruising of the grass should be avoided.

Watering must be efficient as over-watering is as harmful as under watering. During the summer months two waterings per week should be sufficient, providing the watering is efficient; approximately  $\frac{1}{2}$  in. per acre of water is required for each of the two waterings per week.

Rolling should be carried out with a medium weight roller, before watering but after cutting. Excessive heavy rolling is not required on tennis courts.

## BOWLING GREENS

The bowling green is probably the most used and abused turf and it requires much attention and care to maintain it in a perfect condition, as the bowler requires a smooth, even, tightly clipped, fast surface at all times, regardless of seasons or climatic conditions.

The establishment of the green is the same as for a tennis court but it is recommended that once established fertiliser should be applied at four or five-weekly intervals at the rate of  $\frac{1}{2}$  oz. per square yard. The mixture to be used should be one containing a fairly high percentage of nitrogen. The following mixture is recommended—

- 2 parts by weight blood and bone.
- 6 parts by weight sulphate of ammonia.
- 1 part by weight superphosphate.
- 2 parts by weight of muriate of potash.

This mixture can be varied and replacing by one not containing blood and bone as follows—

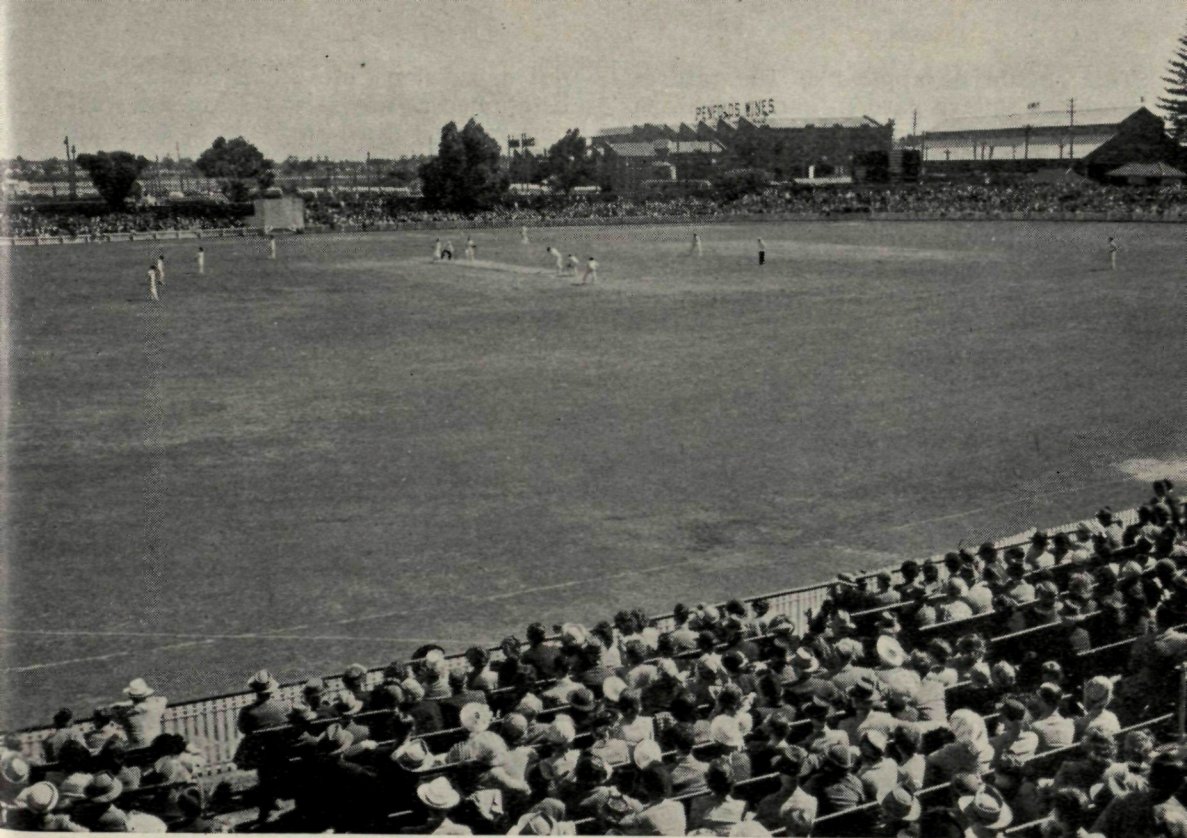
- 3 parts by weight sulphate of ammonia.
- 1 part by weight superphosphate.
- 1 part by weight muriate of potash.

**General Maintenance.**—Wear ends and bare patches do occur on bowling greens and these are brought about by many factors including excessive play, using greens during the period when the surface is wet, or at nights when heavy dews occur, over-rolling, cutting too short or scalping the grass at the beginning or end of the season, together with incorrect fertilising and the use of unsuitable topdressing materials.

## OVALS

As a general rule these are used for cricket, baseball, football, athletics, etc. and have to stand up to heavy wear and tear at certain times of the year. It can be said that the football season in the heavy winter months does the most damage to the grass and also has a detrimental effect on the turf cricket





Play in progress on the West Australian Cricket Association's ground. An example of a playing area where good management has maintained an excellent area of turf

pitches on the oval but by efficient management, much can be done to avoid the heavy wear and tear.

The first consideration on an oval is to see that it is well-drained. Many curators in this State have the impression that as the oval is on sand it is naturally well-drained, but this is not the case. Years of play tend to pack the sand and during heavy rain the area frequently becomes waterlogged in the winter months. The efficient use of well-laid agricultural drains is recommended.

One of the major problems of ovals when used in the winter time for football, etc., is the clay cricket pitches, as during wet weather these frequently become quagmires which the players dislike. Much can be done by the curators to make these areas firm and not the

present-day hazard to players. These turf wickets should be effectively drained and efficiently fertilised in the autumn and winter months to obtain and maintain a good grass cover. After play on wet days these wickets should be given attention by levelling and rolling them out.

The grass area on the oval should receive careful attention throughout the whole season so that it is maintained in first class order. To maintain the oval in this condition the following points will be of assistance.

1. **Fertilising.**—A good general fertiliser made up as follows is recommended—

- 7 parts by weight sulphate of ammonia.
- 4 parts by weight superphosphate.
- 1 part by weight muriate of potash.



This should be applied at the rate of 2 oz. per square yard in early April. It should be applied uniformly. If necessary an application of sulphate of ammonia can be given in early June at the rate of  $\frac{3}{4}$  oz. per square yard. A further application of the above mixed fertiliser can be applied at  $1\frac{1}{2}$  oz. per square yard just prior to topdressing the oval. During the summer months two dressings of sulphate of ammonia can be given, if required, at rates of  $\frac{3}{4}$  ounce per square yard at six-weekly intervals.

**2. Clover.**—The association of suckling clover with the couch grass is recommended for a good winter and spring green. Where not present the seed should be sown at the rate of 8 lb. per acre in the late autumn.

**3. Weeds.**—These will not be a problem on most ovals, providing the grass and clover is maintained at its maximum production. Where they do occur, however, every endeavour should be made to control them.

**4. Topdressing.**—The ideal playing surface is one which is firm yet resilient, but does not cut up with play. To obtain this it is necessary to gradually build up the oval with a topdressing mixture consisting of—

1 part by volume good loam.

3 parts by volume good yellow sand.

4 parts by volume good screened cinders.

This to be applied uniformly in layers not exceeding  $\frac{1}{2}$  in. between the football and the cricket season. This topdressing can be used for gradually levelling

out depressions, etc. This mixture can be applied at any time during the summer months providing that it does not interfere with playing fixtures.

**5. Cutting.**—It is necessary at all times to have the mowers in good condition, and on good surfaces all grass cuttings should be removed and for preference composted. Short close cutting should only be done in the late spring, summer and early autumn months and should never be carried out in the winter.

**6. Watering.**—With watering the first essential is to have an adequate supply which can be applied uniformly and rapidly. Underground pipes with boxes for taps should be avoided. The best system is the use of the moveable on-top-of-the-ground pipe system. The application of about 36,000 gallons of water per acre per week in the summer months should be sufficient. In the hottest periods two waterings per week should suffice.

**7. Rolling.**—This may be necessary at certain times of the year. Heavy compacting will result if rolling is done after watering but as a general rule this is not necessary.

**General.**—When the oval has been excessively used for play and is partly torn about, smoothing over with a link mesh harrows is necessary to assist in filling in scars, etc. In some cases it may be necessary to use the top-dressing mixture on areas for filling in bad scars or depressions.

