



Sydney Environmental & Soil Laboratory

Specialists in Soil Chemistry, Agronomy
and Contamination Assessments

Topdressing Amenity and Playing Turf

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by

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Topdressing, as the term is used in turfgrass science, is the layering of sand and soil materials, not fertilisers, onto the surface of a turf/soil system. Topdressing is used mainly for three reasons-

1. Restoration of a level surface after play or subsidence has affected the surface trueness
2. To create or maintain a desirable (usually coarse) particle size range in the surface soil
3. To control thatch or the organic matter content at the surface, usually to increase speed, bounce, and resistance to mechanical forces.

Different types of topdressing situations occur-

1. Upgrading poor quality playing surfaces. eg a badly degraded council oval or golf fairway constructed basically on natural soil where topdressing is needed to impose a new and more favourable particle size distribution in the surface soil. Here topdressing may be simply a program of say 3 dressings over summer to build up 20 mm of sandy rootzone on top of the natural soil to prevent compaction, followed by a once yearly topdressing as needed.
2. Playing surface based on natural soil where topdressing is necessary to maintain the correct particle size distribution in the surface. The problem here is that earthworm and other disturbance brings fines to the surface which can then give water logging and compaction problems. Topdressing will usually be a once a year phenomenon here.
3. All kinds of playing surfaces where topdressing during the playing season is needed to maintain trueness of the field. This is usually on an as needed basis.
4. Bowling and golf greens. In this case light topdressing is used mainly to control thatch and trueness and is performed frequently up to every 2-3 weeks for high speed greens at the height of the growing season.

Topdressing of special purpose soils such as cricket pitches and tennis courts is not discussed here.

What to Topdress with.

The basic requirement of all topdressing mixtures is that they maintain some pore space and hence permeability when fully compacted. A narrowly graded sand will maintain 10-30 % pore space if fully compacted. Natural soils will generally not do this as they have a range of particle sizes that fit in to each other so that little pore space is left after compaction. The commonly available sandy loams around Sydney are really **silty alluviums** and **must never be used for topdressing as they compact extremely badly.**

The usual topdressing materials are composed of sand alone or in various mixtures with sandy loam soils. Common mixtures will be 80/20 and 90/10 sand/soil mixes. Sometimes organic matter is included in the mixture. Fertilisers, soil ameliorants such as lime, and pesticides can be included for special purposes.

In topdressing the first thing to look out for is that layering be avoided or that coarser material overlies finer material, not the other way around. Where a layer of fine soil or sand material overlies a layer of coarser sand or soil at shallow depth irrigation water will "perch" in the fine layer and will not flow into the coarse layer. This can lead to a number of problems-

1. Plant growth will suffer in prolonged wet weather
2. Heavily used turf will become a quagmire
3. Traffic will more easily compact the wet soil
4. Root growth will be shallow and thatching will be encouraged.

It is thus essential to establish what your existing soil is before choosing a topdressing. The Golden Rule is that the **particle size distribution of the topdressing material must be the same or coarser than the soil below it.**

Greens and constructed sand profiles.

These installations are very expensive to construct and can easily be degraded by using the wrong topdressing material. In both of these situations the topdressing material should be the same as the existing material. Records should have been kept of the sand used in construction and topdressing material designed to mimic that distribution as far as possible.

Various grading curves and suggested particle size distributions such as the STRI and USGA are used. They generally allow some small percentage of silt plus clay, around 4% and no more than 8% clay plus silt plus very fine sand.

It has been found that discretely graded pure medium sand has not got sufficient sheer strength when dry to put up with normal use and a small fines content as well as some coarser sand content is needed to improve water holding and sheer strength.

The particle size gradation recommended by the ATRI for rootzone construction mixtures can also be used for topdressing. Table 1 gives the specification they recommend.

Table 1. Particle Size Distribution Specified by the ATRI

Particle	Diameter mm	Recommended as % retained	
		Golf	Bowling
Gravel	>2.0	0	0-10
Very coarse sand	1.0-2.0	max 10	0-10
Coarse sand	0.5-1.0	CS + MS = min 65%	20-40
Medium sand	0.25-0.5		40-60
Fine sand	0.1-0.25	Max 25%	10-20
Very fine sand	0.05-0.1	Vfs + C + Si = Max 8 %	1-5
Clay plus Silt	<0.05		0-5

Note that such particle size distributions can be expressed as % passing or as % retained, or as cumulative gradient curves.

Natural Soil ovals, fairways and playing fields.

In these situations topdressing is used to enhance playability in wet weather by modifying the particle size distribution at the surface to give an incompressible layer that will drain easily after rain. It can also be used to level surfaces after disturbance or subsidence. It is

often necessary also to sand slit and core before topdressing, the sandy topdressing material being swept or worked down in to the cores and slits.

The specifications given in Table 1 also apply to this situation although up to 10% clay plus silt plus very fine sand may be allowed. Thus an 80/20 mix may be possible or even preferable.

There is also room for adding organic matter or fertiliser if you have a very poor turf needing renovation. Where, for example, the pH of the existing soil was very acidic lime or dolomite could be added to the topdressing mixture.

To take a totally natural soil playing field giving problems may take a period of 2 seasons of topdressing in several applications to build up 20-40 mm of sandy topdressing material which is the desired depth for protecting the lower soil layers from compaction.

Maintaining Trueness in existing fields.

Where existing high quality fields such as complete sand profile or drained and sand profiled natural soil fields are performing well and need to be maintained "true" it is essential that exactly the same material as is used in their construction is used for topdressing. It is most important to keep records and diaries, or to examine profiles and have samples tested where previous history is not known.

Only where existing conditions need improving should a coarser material be used for topdressing. Never use a material finer than the existing soil for topdressing. Many "off the shelf" products should fulfil the requirement otherwise a special mix can be designed.

Rarely if ever is organic matter needed, it is much cheaper and more effective to manipulate thatch to add organic matter to the new topdressing layer. Rarely is it desirable to use pure medium sand as a small fines and coarser content improves sheer strength.

Further Reading

Adams, W.A., and R.J. Gibbs. (1994) *Natural Turf for Sport and Amenity: Science and Practice*. CAB International. Wallingford UK. pages 132 to 135 and 182 to 186.

Handreck, K. H., and Black, N. D. (1994) *Growing Media for Ornamental Plants and Turf*. UNSW Press. Randwick NSW. pages 192 to 206 and 223 to 227