SLUDGE COMPOST USE ON ATHLETIC FIELDS

The need for maintaining, renovating and constructing sports fields creates a strong potential outlet for compost based materials. Educating "specifiers" and the public on proper methods is critical.

Ron Alexander

IMPROPERLY maintained athletic fields can be found within the school and parks/recreation departments of most municipalities. At the same time, athletic field safety and the liability issue from poorly maintained playing areas have been getting increased media coverage. Studies at Pennsylvania State University have shown quantitatively that properly maintained fields are safer to play on than those not adequately maintained. Better fields possess smoother surfaces, less compacted soil, and more vegetative cover.

The need for athletic field maintenance, renovation and construction creates a strong potential market for compost-based materials. This end use could enable a municipality to utilize large quantities of compost to improve the quality of turf areas currently being ignored.

The next question relates to the safety of using sludge based compost on athletic fields. This question commonly is asked by members of the general public, demanding proof that the compost won't infect or affect their children. Their common fears will be related to the heavy metal content and bacteria (virus, fungi, etc.) levels in the compost. The answer is that sludge compost which meets federal standards created by the U.S. Environmental Protection Agency is safe for such uses. The goal must be to have an educated and skilled staff supplied with adequate technical data to address the concerns of the general public.

COMPOST QUALITIES

Sludge compost is an inexpensive source of high quality, bulk organic matter. Commonly, its price is half that of peat moss and peat humus. It also is uniform and consistent. Organic matter content, pH, nutrient content, etc. will remain extremely consistent from load to load — unlike many of the sources of topsoil and mushroom soil.

Sludge compost is rich in plant macro nutrients such as nitrogen, phosphorous, and potassium. The compost usually contains one to two percent nitrogen, which is probably the most commonly applied plant nutrient (fertilizer). Much of that nitrogen is in an organic form, which will remain for long periods of time in the soil. Sludge compost is also rich in micro nutrients, which are not contained in many common fertilizers. Finally, the organic matter content of sludge based compost is between 40 and 70 percent.

Sludge compost is primarily used by sports turf professionals in three ways: 1) As a turf topdressing to help maintain the quality of the turf surface; 2) As a soil amendment in the renovation of athletic fields; and 3) As a component to athletic field mixes, used in the construction of new fields.

TOPDRESSING

Topdressing has long been a reliable turf maintenance practice in the golf course industry. The practice — usually done in conjunction with aerating and reseeding to promote seed germination, increase soil organic matter content and level turf surfaces — entails applying a thin uniform layer of material over an established, but declining turf area. For aeration, hollow and/or spoon like tines are projected into the soil. Small plugs of soil are pulled onto the turf surface as the tines are removed from the ground. Topdressing — commonly using topsoil, compost, sand and/or sand based mixes — would then be applied and the holes refilled through mechanical dragging. Additional benefits of aerification include: improved soil drainage, increased water holding capacity, and reduced soil compaction. When applied in conjunction with seeding, topdressing helps improve seed germination. (See sidebar for details.)

On fields to be renovated, compost should be incorporated into the soil at a depth of six to 10 inches.

TOPDRESSING AND RENOVATING ATHLETIC FIELDS

THE FOLLOWING is a step by step guide to the topdressing and renovation of athletic fields:

TOPDRESSING

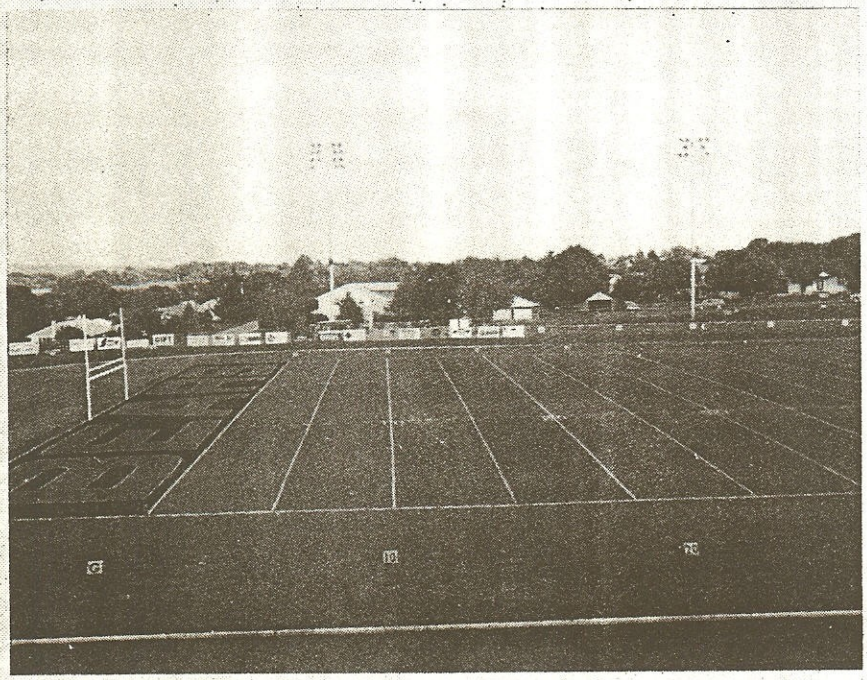
1. Heavily core aerate the entire athletic field, concentrating on most heavily trafficked areas.
2. Apply approximately a 1/2 inch layer of compost or 50/50 sand/compost mixture. The most uniform and efficient way to apply the compost is with a topdressing unit or manure spreader.
3. Smooth the turf surface with a raking device or a steel drag mat. The raking/dragging will break up the soil plugs, mix it with the compost and backfill the holes.
4. Seed and water the topdressed area. It is important to not leave the grass seed on the soil surface. It should be mixed into the soil/compost layer.

When compost is used as a topdressing, make it as fine as possible. Most professionals prefer a topdressing material that is screened through a 1/4 inch screen. The best equipment for applying topdressing are units that apply compost directly onto the soil surface and not up in the air (like manure spreaders do). Applying compost directly onto the soil surface achieves better uniformity, while creating less odor and mess.

RENOVATION

1. Mechanically till the entire field, turning the soil and destroying the remaining vegetation. A rototiller or farm disk are the best pieces of equipment to use.
2. Apply two to three inches of compost screened through a ⅜ inch screen over the entire field. More product can be used in areas on the field which have received the most wear (e.g. center of football fields).
3. Incorporate the compost into the field to a depth of six to 10 inches. Normally, it is best to incorporate the product as deeply as possible. Work the soil until it is thoroughly mixed and clump free.
4. Shape and smooth the field using a raking device. Firm the field using a light roller. Establish a crown on the field if required.
5. Seed and water the field. Make sure the seed is incorporated into the top 1/4 inch of modified soil.

The new compost enriched soil provides an excellent medium for turf growth. It also will allow the turf stand to survive through more stressful environmental conditions such as drought. —R.A.



Boyertown, Pennsylvania's High School football field was constructed from a compost/sand/soil mix.

RENOVATING

When athletic fields are overused and large portions of their vegetative cover have been destroyed, renovating is necessary. This entails destroying the surviving turf stand in favor of establishing a new, healthier one.

Each type of athletic field has its own wear pattern. On football fields, most wear is in the center, "between the hash marks." On soccer and field hockey fields, the goal area is the most heavily worn. These areas are sparsely covered with turf and the soil beneath them is extremely compacted. The renovation process loosens the soil, allowing the grass roots to grow deeply. Adding compost improves the characteristics of specific soils in different ways. In heavier, clay based soils the compost will lighten the soil, improving drainage and slowing compaction. In lighter, sandy soils the compost will improve the soil's water holding capacity and ability to utilize nutrients.

CONSTRUCTION

The use of sludge compost in the construction of new athletic fields will continue to increase as the popularity of soilless, sand based athletic field mixes increases. Recommended mixes for these fields consist mainly of uniform sand with a small amount of organic matter or topsoil added for good measure. Less and less topsoil is being used because it is difficult to find large quantities of uniform and weed free sources. A common mix will consist of nine parts sand to one part organic matter (usually peat moss), or eight parts sand to one part topsoil to one part organic matter. Sludge compost can be used to fulfill the organic matter requirement of this mix. It also can be used to replace topsoil in the mix entirely. Sludge compost can be significantly more uniform than commercially available topsoil and less expensive than other commercially available bulk organic matter sources.

EDUCATING THE MARKET

Most people will agree that the key to any successful sludge management program is to produce consistently high quality products and to have those products utilized. The key to having these sludge based products utilized (e.g. compost) is education. That usually means educating the public sector, green industry professionals, public agency staff and "specifiers."

Specifiers are individuals who recommend or specify the products used in particular projects. The most important of these are landscape architects, construction engineers, extension service agents, and soil conservation specialists. The more compost being produced in a particular plant or area, the more important it is to educate these specifiers. Municipalities and companies producing sludge compost must put a structure in place to contact these individuals; it is the missing link to most programs. ■

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