How **much** Crown?

Q&A

by Dr. Dave Minner

Have questions? Send them to Dave at: ISU, Hort. Dept., Ames, IA 50011.

How much crown do you recommend for football and soccer fields?

- Doug Ford

Geneseo, IL

The crown of a field refers to the rise in the center. The slope created by the rise, or crown, helps move water from the playing surface off the sides of the field.

The National Federation of High Schools suggests that the field should rise 0.25 inches per foot from the sideline to the center of the field (*1998-99 Football Rules Book*, Rule 1, Section 2, Article 1). A standard football field should rise 20 inches (1.67 feet) over a distance of approximately 80 feet from the sideline to the field center.

Sometimes the crown is referred to as slope. To calculate percent slope, simply divide feet of rise by feet of run (1.67 ft. / 80 ft. = 0.02 or two-percent slope). The two-percent crown has served as a long-time standard for high school football fields built from native soils.

The crown is especially important on heavier soils. It directs puddles from the surface rather than allowing the water to seep into the soil. Standing water on the surface will eventually saturate the ground and cause soggy playing conditions.

A two-percent crown is seldom noticed from the bleachers, but it's very obvious when you're down on the field. High school players and coaches seem to tolerate crowned fields, especially if it helps the field from becoming a mud bowl.

I personally think that a 1.5-percent crown is sufficient for surface drainage on soil fields, and this reduces the severity of the crown. There's a clear trend towards building fields with less slope:

- At the college and professional levels, the two-percent crowned field is being phased out in favor of a flatter surface. As players' skill levels increase, they notice small differences in the field that affect their performance. For example quarterbacks don't like to throw down hill when receivers run sideline patterns.
- Synthetic-turf fields are usually crowned at 0.5 percent. The crown of natural-grass fields should be similar and competitive with synthetic fields.
- Rapidly draining sand-based fields have crowns that slope 0.5 to 0.8 percent. Because of the high sand content and rapid internal drainage of sand systems, very little rain runs off the field.
- Field crown can have a very pronounced effect on soccer because of the high degree of ball contact with the field. Soccer players and coaches prefer a flat field with no slope. Sand-based fields with 0.0- to 0.5-percent slope are very acceptable for soccer. Sand-based fields up to 0.8-percent slope have proven to be a nice compromise when both football and soccer are played on the same field.

Not only is it important to construct a proper crown when building a new field, it's important to maintain the crown throughout the life of the field. I see many fields that were once properly crowned, but with time and traffic they have lost the apex of the crown in the center of the field.

Intense traffic wears away the protective mat of grass. It doesn't allow the center of the field to increase in biomass like other, less-trafficked areas. Once the grass is removed, exposed soil can be removed from the field on players shoes and uniforms, especially during muddy conditions.

Routine topdressing and grass re-establishment of intense-traffic areas will keep the crown properly shaped. Failure to topdress on a regular basis will hasten the costly expense of rebuilding the crown. You can pay a little each year to maintain the crown through topdressing, or you can pay a great deal more to rebuild the crown when it is beyond repair.

If you must rebuild, take the opportunity to place sand-filled French drains down the center of the field and along each set of hash marks.

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