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## Q&A

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# What's in a Good Sports Field?

By Dr. David Minner

A good field has sufficient traction and firmness to maximize player ability without increasing risk of injury. Water in the surface two inches is the most important factor in determining a field's degree of hardness and traction.

### What Happens from Too Much Water?

**1. Mud bowl.** This usually occurs on native soil fields that have a high clay content, high water-holding capacity, and slow infiltration rate (less than 1 inch per hour). Sand-based fields are designed to have good internal drainage, but when they are sodded with high clay content soils, excessive water may be held near the surface.

Too much water makes a field soft, so it tears easily and the soil compresses easily. In other words, soils that become saturated with water offer little resistance to cleat penetration, and are easily displaced. Rutting and tearing of the grass surface during soggy conditions expose the underlying soil and result in a "mud bowl" game.

Use the "squashy-feet test" to determine if your field is too wet. Simply walk on the field and notice if water is "squashing" out from under the soles of your shoes. If there is no visible water, stand in one spot and shift your weight from foot to foot about 10 to 20 times. If the field is too

wet, the ground will begin to "pump" a little, and water will squash beneath your shoes. This visible display of excessive moisture near the surface, "squashy-feet," is a good indication that your team is going to the mud bowl between the hash marks.

**2. Slick surface.** Avoid irrigation for 24 hours prior to a game. Try to schedule irrigation so the field is in a moderate-to-dry condition just before game time. Should it rain during the game, a drier field will be able to absorb more water before reaching soggy conditions. Also, drier fields tear less and resist soil compaction.

In some situations, perennial ryegrass has been suggested as a contributing factor to slick fields. When the blades of perennial ryegrass are dry, the field seldom becomes slick. Wet blades of perennial ryegrass from irrigation or dew increase surface slickness compared to most other cool season grasses. Perennial ryegrass fields that are tarped may become especially slick from the slim-like moisture that develops under the tarp.

Topdressing with sand and crumb rubber can reduce water held in the rootzone near the surface. Topdressing with water-absorbing materials such as calcined clay or diatomaceous earth can quickly dry the grass surface and reduce slickness.

Although there may be some slickness attributed to perennial ryegrass, its fast establishment and good traffic tolerance make it highly desirable

when reestablishing grass on worn fields.

### What Happens from Too Little Water?

**1. Concrete-like surface: poor cleat penetration.** Fields may be soft and easily compacted when wet, but when they become very dry, they harden. Such field conditions are often described to be "as hard as concrete," resulting in very poor cleat penetration and players skating across the hard surface on the tips of their cleats. Excessively hard fields can also cause injury from player-to-surface contact.

**2. Dry sand: unstable surface.** Poor footing can also result on sandy fields that are too dry. Sand-based fields, or soil fields heavily topdressed with sand, contain a high degree of non-compactive particles near the surface. Sands reduce compaction and allow space for root growth, but sands are also less stable simply because they compact less.

Think of the beach. Dry sand away from the shoreline is unstable and difficult to walk on, whereas the wet sand near the breakers is firm and more stable. Avoid excessively dry conditions during the game that may reduce footing on sandy fields. □

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