

**UCR FIELD PERFORMANCE INDICATOR:
HOP, ROLL, AND DEFLECTION EVALUATION OF SOCCER PLAYING SURFACE**

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Equipment:

- A. FIFA-Approved soccer ball
- B. Velocity Acceleration Ramp (VAR)--Ramp 3 meters (10 ft.) long elevated 2.1 meters (7 ft.)
- C. Ball Hop Indicator (BHI)--Stationary frame with free-swinging arm at 2 centimeter intervals
- D. Ball air pressure gauge
- E. Miscellaneous--two 30-meter tapes; stakes for tapes, carrying case

Procedure:

For all evaluations, a soccer ball inflated to 0.6 kg.sq.cm. (8.5 psi) is released from the top of the VAR with V_r valve pointing down the ramp, and rolls along the acceleration gradient increasing velocity, leaving the ramp at its maximum velocity, V_m . Ball strikes BHI at V_a at the apex of the first hop after leaving the VAR.

Roll and deflection are measured by allowing the ball to roll free down a straight line marked with a measuring tape until velocity is expended V_s and it stops. Distance from foot of VAR and deflection from the line are measured and recorded. Evaluations are repeated a minimum of ten times (ten ball hop and ten roll/deflection). High reading and low readings are thrown out, the remaining eight averaged. Measurements are taken in a minimum of three sites on the playing field.

Test Sites:

- A. UCR Turfgrass Research Facility--Common Bermudagrass; Tifway II; Santa Ana; DeAnza zoysiagrass; kikuyugrass; perennial ryegrass; Kentucky bluegrass; tall fescue; bare ground.
- B. UCR Intramural Playing Field--two or more good turf areas and two or more worn areas.
- C. Rose Bowl--hybrid bermudagrass
- D. Cultural practices evaluated--mowing height, rolling, water management

World Cup Venues:

Citrus Bowl
Cotton Bowl
Foxboro Stadium

Giants Stadium
RFK Stadium
Rose Bowl

Silverdome
Soldier Field
Stanford Stadium