

混播草坪上足球运动践踏模拟效果的研究

Soccer Wear Simulation on Sport Turf Mixture

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中文摘要:

在分析足球场草坪的运动受力和前人运动践踏模拟方法的基础上, 推出了用截面为椭圆形滚子安装足球鞋钉进行运动践踏模拟的方法。椭圆长轴为40 cm, 短轴为20 cm, 滚子宽70 cm, 加水后重70 kg。由于惯性作用和表面曲率的不同, 较同样直径和重量的圆滚子产生更大的砸实及水平切削力。试验在高羊茅与结缕草混播的草坪上实施6.5 cm、5.0 cm及3.5 cm刈割水平和10、5、0趟/周的践踏处理。结果表明, 用土壤贯入仪读数和孔隙度表现的重践踏区的土壤紧实度接近使用率很高的工人体育场结缕草草坪。在刈割高度为3.5 cm时, 重践踏区的草坪摩擦系数和扭矩系数分别为1.38和1.22, 略低于工人体育场结缕草草坪1.73和1.31之值。混播草坪的参数更适合于足球运动。

英文摘要:

A roller with an ellipse transverse section, and football shoe studs fixed on the surface at 5 cm × 5 cm space, was designed to simulate soccer wear. The longer axis and shorter axis of the ellipse were 40 cm and 20 cm respectively. The weight of the roller can be adjusted by filling water in it. Because of inertia and curvature, it presents more effective consolidating and shearing forces than a cylinder roller. The equipment was used to wear 10, 5 and 0 passes/week on a tall fescue and zoysiagrass mixture, with cutting regime as 6.5 cm, 5 cm and 3.5 cm in the growing season. As a result of hard wear, the turf firmness, as measured by penetrometer and soil void ratio analysis, was very close to the data obtained from a frequently used zoysiagrass soccer pitch. At the 3.5 cm cutting level, the coefficient of friction and torque were 1.38 and 1.22 respectively. The values were lower than that of 1.73 and 1.31 in the zoysiagrass soccer pitch, but considered more suitable for soccer game.

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