

# The Impact of Golf Courses on Soil Quality

**Kansas State University**

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Start Date: 1998

Number of Years: 5

Total Funding: \$50,000

Objectives:

1. *Study the construction of a golf course in a grassland ecosystem.*
2. *Quantify indicators of soil quality and follow their change during the construction and establishment of a golf course on a natural grassland site.*
3. *Changes to soil quality indicators will be described, quantified, and used to predict areas where future golf construction and/or management actions may require special attention to minimize their negative environmental impact.*

This project is monitoring soil quality criteria necessary to assess the long-term impact and sustainability of golf courses on the soil environment. Research was initiated in 1997-1998 at a time the future golf course site was in a natural grassland, or pre-construction condition. These field observations and sample collections were made to establish base-line values for a host of critical indicators of soil quality. Mapping of the area identified seven soil series on the golf course site.

During late 1998 and for most of 1999 the course was in the "construction phase". Extensive modification of the original soil occurred in all fairways. Essentially a new and different soil profile was produced. A base layer typically consisting of unweathered or slightly-weathered shale and fractured limestone was put in place, to shape each fairway according to architects specifications. In some areas the base layer consisted of subsoil materials quite high in silt and clay content. After topsoil was put in place, and before the fairways were sodded, another set of samples was collected. Sodding finished in late 1999.

During the next several years the same sites will be sampled each spring and fall. Our objective is to quantify indicators of soil quality and follow their change during the construction and establishment of a golf course on a natural grassland site. Changes in soil quality indicators will be described, quantified, and used to predict areas where future golf construction and/or management way require special attention