Effects of cultivation and fertilization on the root distribution in compacted soil. (C05-wiecko180231-Poster)

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Abstract:

Golf courses in the tropics are subject to year round compaction. To alleviate its negative effect, core aerification is performed but frequent fertilization is practiced as well. Field experiment was conducted on bermudagrass putting green subjected to vehicular compaction. Two fertilizer programs included monthly application of complete fertilizer and monthly application of urea, followed by urea, followed by complete fertilizer. Nitrogen rates were 0.5 kg/ha, 1.0 kg/ha, and 1.5 kg/ha. At the beginning of this study one third of the plots received core aerification. The weight of roots at 0-10 cm and 10-20 cm depth was compared to compacted and uncompacted check. After one month the average weight of shallow roots in the compacted soil was more than double when compared to uncompacted soil and 27% higher than in compacted and aerified soil. The increased rate of nitrogen fertilization was positively correlated with the weight of shallow roots. Deep roots in the compacted soil were highly reduced when compared to uncompacted soil and negatively correlated to the nitrogen level. Positive effects of aerification were most profound in the second and third month where the weigh of roots at 0-10 cm and 10-20 cm depth surpassed both compacted and uncompacted checks.

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