CONCLUSIONS

The following conclusions can be made regarding the thatch studies conducted in this investigation:

1. The five turfgrass thatch measurement techniques were found to vary significantly in terms of repeatability for each turfgrass species.

2. The thatch weight technique was consistently the most reliable (lowest repeatability quotient) measurement technique for the three species; and, although the most time-consuming and demanding in terms of equipment needs, is the recommended method for the researcher.

3. The water displacement (volume) measurement was the least reliable for all three species and thus is not recommended for use.

4. Thatch depth and thatchmeter techniques were comparable in repeatability with the depth measurement still the more preferable for use in the field.

5. Statistical analysis on bentgrass showed a significant correlation between the thatchmeter and thatch depth \( r = .98 \) and weight \( r = .74 \). There were no significant correlations between the thatchmeter and thatch for Kentucky bluegrass, and only one low
correlation \((r = .33)\), with thatch depth, for annual bluegrass.

6. Verdure and pseudothatch accounted for the majority \((R^2 = .63)\) of variability in thatchmeter readings on Kentucky bluegrass (1.5 inch mowing height) but accounted for little \((R^2 = .001)\) on creeping bentgrass, (0.25 inch mowing height), which suggests an influence of cutting height on the ability of the thatchmeter to measure thatch.

7. With further evaluation by turf professionals to establish limits of high and low resilience for various turfgrass cultivars, the thatchmeter offers potential value as a means of monitoring year-to-year thatch accumulation on greens turfs.

8. Increases in greens mat accumulation produced significant increases in the wear tolerance of the turf as measured by a wear simulator.

9. Penetrometer measurements of soil beneath each mat layer suggest a negative correlation between wear tolerance and subsurface soil penetrability.

10. The mat layer was responsible for most of the wear differential on creeping bentgrass greens.

11. Based on conversion of wear revolutions to time, a moderate level (8-10 mm or 200-220 mg/cm\(^2\)) of mat was found to be most desirable for improved wear tolerance without creating problems associated with excessive mat accumulation on greens.
12. Both increased nitrogen rates and mowing heights produced significant increases in thatch accumulation for Wintergreen chewings fescue and Merion Kentucky bluegrass over an 8-year period. These data suggest the importance of judicious use of nitrogen fertilizers to avoid excessive plant growth and the potential for manipulating mowing height to reduce thatch accumulation.

13. Uramite®, at one application per year, accumulated more thatch than the two or three applications per year treatment. This result amplifies the importance of the frequency of application of synthetic organic nitrogen carriers relative to thatch control.

14. The synthetic organic carrier, ureaformaldehyde (Uramite®), encouraged less (25%) thatch accumulation compared to the synthetic inorganic carrier (NH₄NO₃) and natural organic carrier (Milorganite®).

15. The pesticide, calcium arsenate, was responsible for a significant increase (39%) in thatch accumulation during a 9-year study.