Soil Compaction Test Project
by GrassRoots Lawn Care of Oklahoma

Question
Does one standard application of Liquid Soil Aerator reduce soil compaction on a wide scale, enough to justify a large lawn applicator (over 20,000 customers) to apply as a standard application each year for every customer?

Purpose
This test will help determine if it is feasible for the largest lawn applicator in Oklahoma to apply Liquid Soil Aerator on every customer, over a wide range of soil conditions.

Test Sites
Two hundred twenty two (222) test sites were selected at random from the customer list.

Control
One standard application of Liquid Soil Aerator was applied at the label rate on each of the test sites. Two measurements for soil compaction were taken by the GrassRoots Lawn Technicians, one at the time of application and the other 8 weeks after application. Each site was marked and recorded in the technicians journal.

Application
On July 16, 2002 each site was treated with the standard application of Liquid Soil Aerator. The standard rate is 4oz Liquid Soil Aerator diluted 60:1 per 1000 square feet.

Tests Performed
On July 16, 2002 a soil compaction test was performed on each site. Two measurements were taken at each site, the first one at the 3" depth and the second at the 6" depth. The method used was a soil compaction gauge that measures penetration resistance in pounds per square inch.
On September 16, 2002 a second soil compaction test was performed on each site at the 3" depth and at the 6" depth.

Test Results
Two hundred twenty two tests were performed at both the 3 and 6" depth.

- Before: Average soil compaction at the 3" depth was 187 pounds per square inch before application.
- After: Average soil compaction at the 3" depth was 107 pounds per square inch 8 weeks after application.
- Result: Average soil compaction reduction was 80 pounds per square inch.
- Result Percentage: Average reduction in soil compaction was 43%.
- Before: Average soil compaction at the 6" depth was 239 pounds per square inch before application.
- After: Average soil compaction at the 6" depth was 170 pounds per square inch 8 weeks after application.
- Result: Average soil compaction reduction was 68 pounds per square inch.
- Result Percentage: Average reduction in soil compaction was 29%.

Summary of Test Results:

Penetration Resistance lbs/sq.in.	Number of Tests	Average Decrease lbs/sq.in.	Average Decrease %
1-50 3" Depth	13	2	4
51-100 3" Depth	42	19	23
101-150 3" Depth	59	58	34
151-200 3" Depth	29	90	46

201-250 3" Depth	23	116	47
251-300 3" Depth	56	177	59
1-50 6" Depth	1	0	0
51-100 6" Depth	21	14	15
101-150 6" Depth	31	34	24
151-200 6" Depth	27	56	28
201-250 6" Depth	31	67	28
251-300 6" Depth	111	112	38

Interpretation
The data suggests that in highly compacted soils Liquid Soil Aerator becomes more effective. At both the 3 and 6" depth, these tests demonstrate a direct relationship between severity of compaction and the result after treatment.

The soil compaction tests prove the effectiveness of Liquid Soil Aerator on a wide range of soil conditions. The high number of repetitions and using two depths substantiate the usefulness of Liquid Soil Aerator on a broad scale.

Conclusion
The application of Liquid Soil Aerator on a wide range of soil conditions has substantially reduced soil compaction enough to justify the largest lawn applicator in Oklahoma to apply the product on every customer each year as a routine application. This test supports the claim that Liquid Soil Aerator reduces soil compaction.