

Nutrients Plus Fertilizer Program Trials at Virginia Tech: final report for 2008

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Introduction and Background of the 6 Trials

Trials comparing NutrientsPlus season-long fertilizer programs that supply nutrients plus 10 (NP1), 15 (NP2), or 20 (NP3) lbs organic matter/M for cool- and warm-season lawns with a standard Lesco fertilizer (PCSCU, 28-5-12) were conducted in Blacksburg and Virginia Beach in 2008.

One objective was to determine whether NPlus programs could provide equivalent or improved turfgrass color and quality as compared to the Lesco program even when less overall seasonal N was applied. A further objective was to determine whether additional gains in turfgrass health could be achieved through various organic matter loading rates.

Codes, species, locations, and mowing heights for the six trials are listed below

A = Tall fescue 3-app program in Blacksburg at 2.5”.

B = Kentucky bluegrass/perennial ryegrass mix, 5-app program in Blacksburg at 2.5”

C = Tifway bermudagrass, 3-app program in Blacksburg at 0.6”

D = Kentucky bluegrass/perennial ryegrass mix, 3-app program in Blacksburg at 2.5”

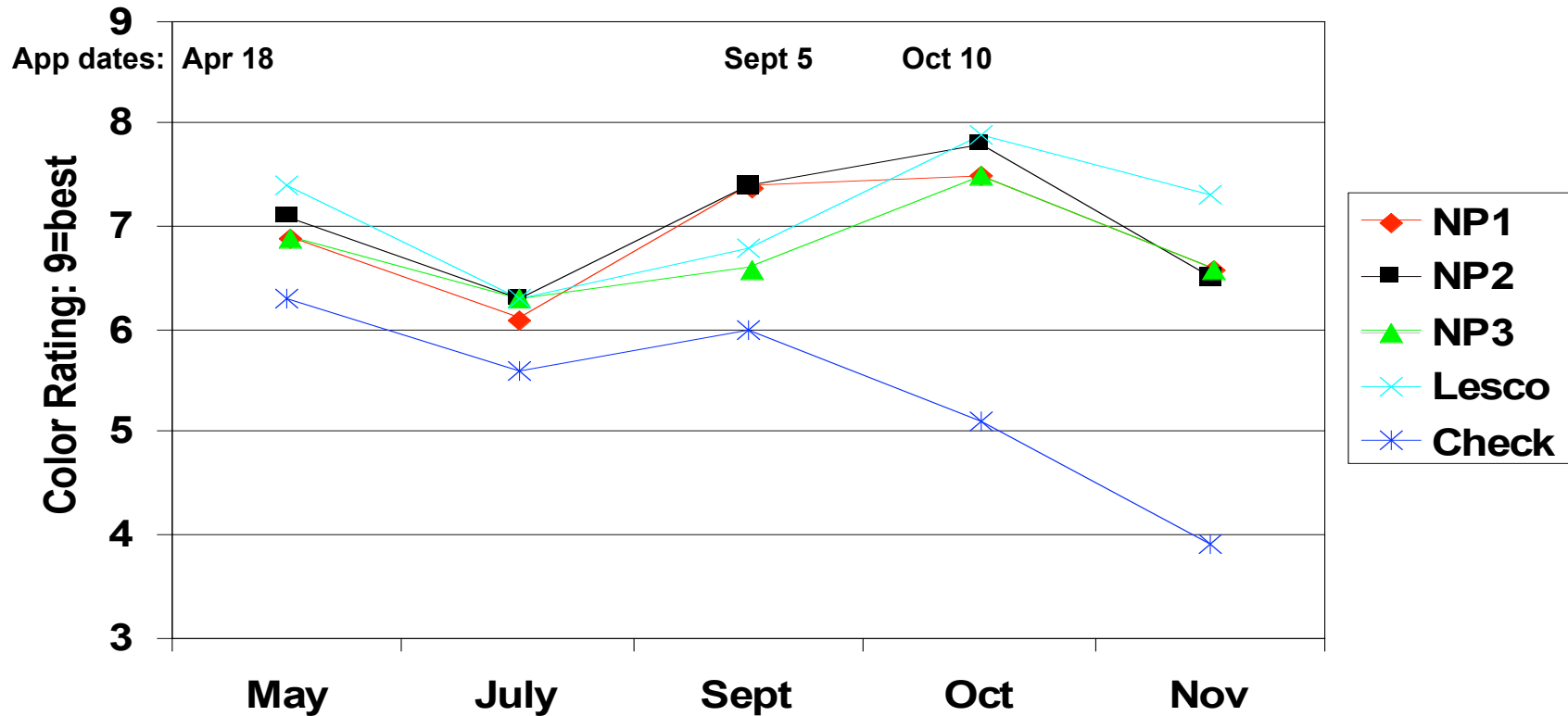
E = Tall fescue 5-app program in Virginia Beach at 4”.

F = Tifsport bermudagrass, 5-app program in Virginia Beach at 1.5”

Samples for soil chemical tests were taken to a 2” depth (shoots/thatch removed) in May, July, Sept, and Nov. Irrigation was applied as needed to allow recovery from minor wilting events. Broadleaf weeds were controlled as needed and a spring preemergent herbicide was applied to prevent crabgrass.

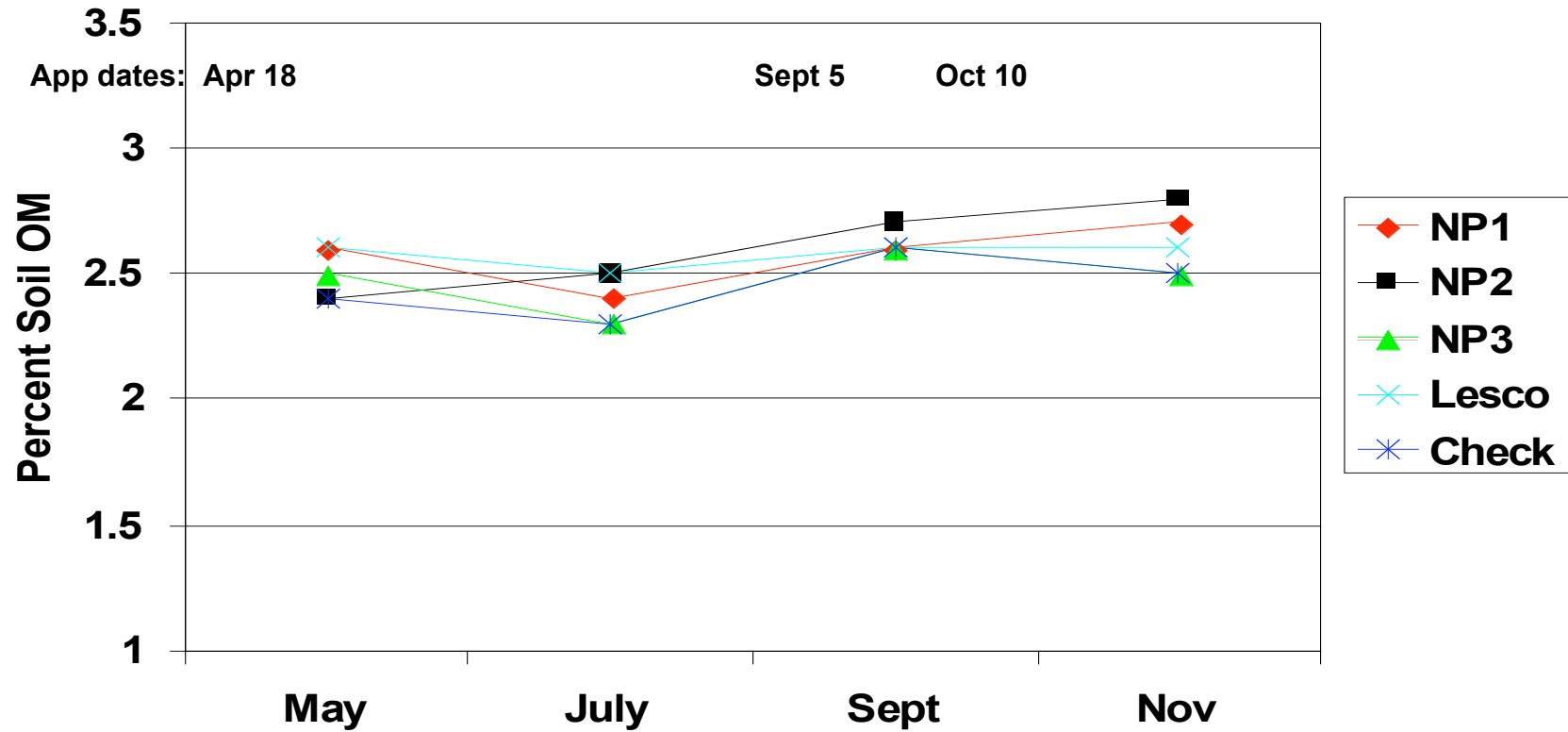
All of the data has been forwarded as text files. Refer to these data sheets for complete treatment descriptions and to determine statistical significance ($P = 0.10$). In what follows only 4 data parameters (color, organic matter, CEC, and total soluble soil N) are graphically presented as a means of illustrating major treatment effects.

Color Response of Tall Fescue in Blacksburg: 2008



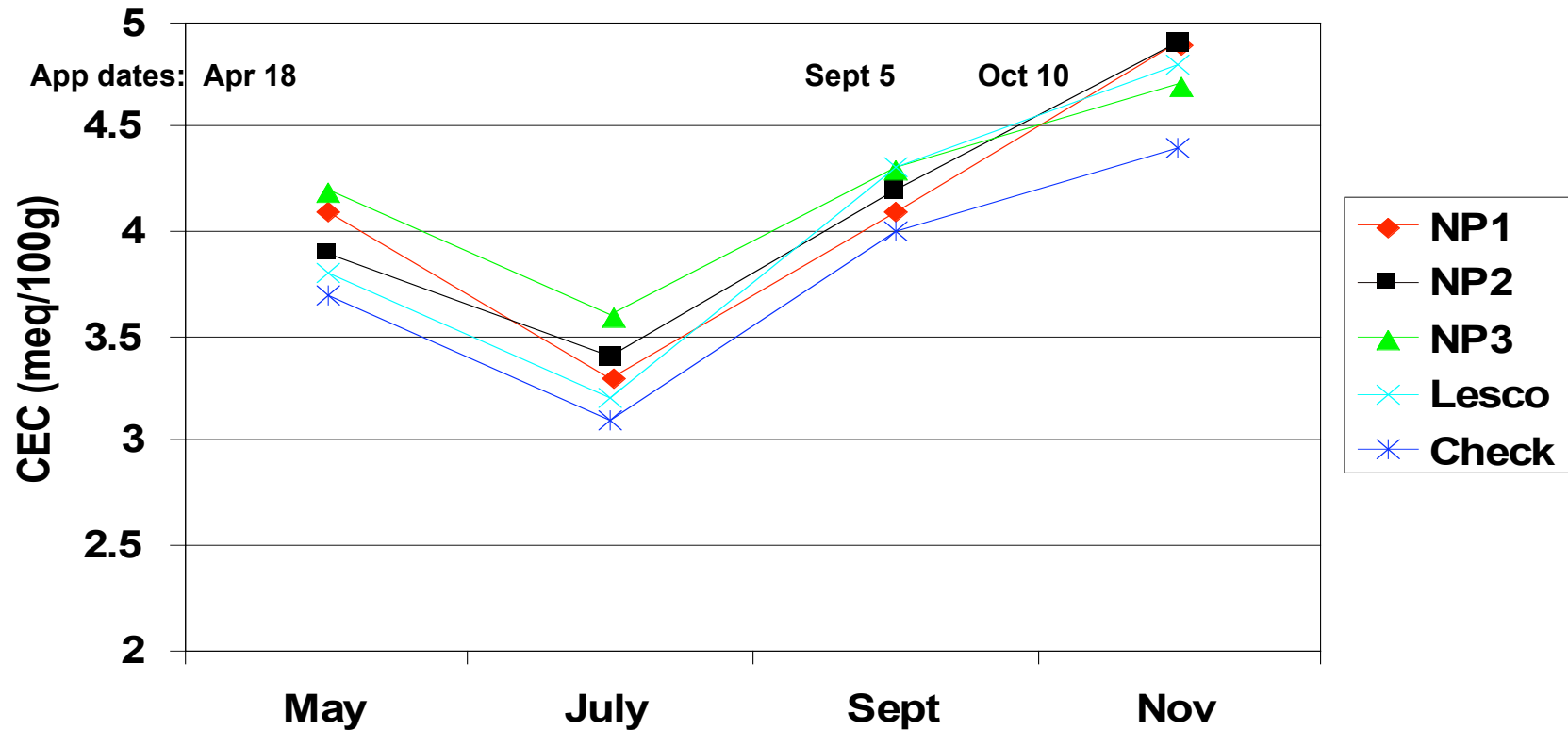
Comments: Across the whole season all fertilizer treatments were darker green than the check. On Sept 11, the NP1 and NP2 treatments provided superior color, while on Nov 11 the Lesco treatment was superior. Over the whole season NP programs that provided only 2.1 to 2.4 lbs N/M resulted in equivalent color to the Lesco program that provided 3.5 lbs N/M.

Soil Organic Matter (0-2") of Tall Fescue in Blacksburg: 2008



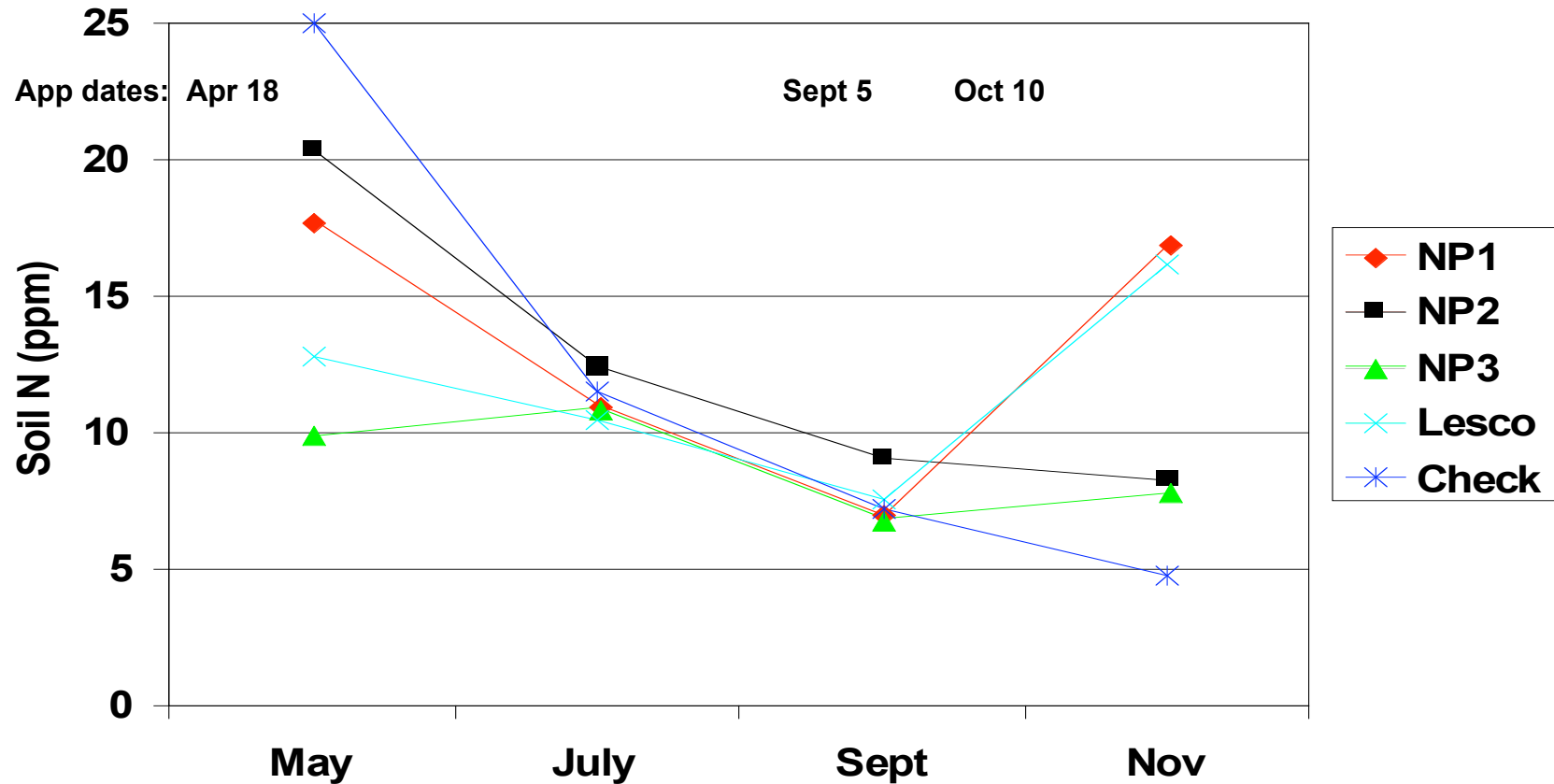
Comments: No statistically or biologically meaningful increases in soil OM were measured at any time during the season.

Cation Exchange Capacity of Tall Fescue in Blacksburg: 2008



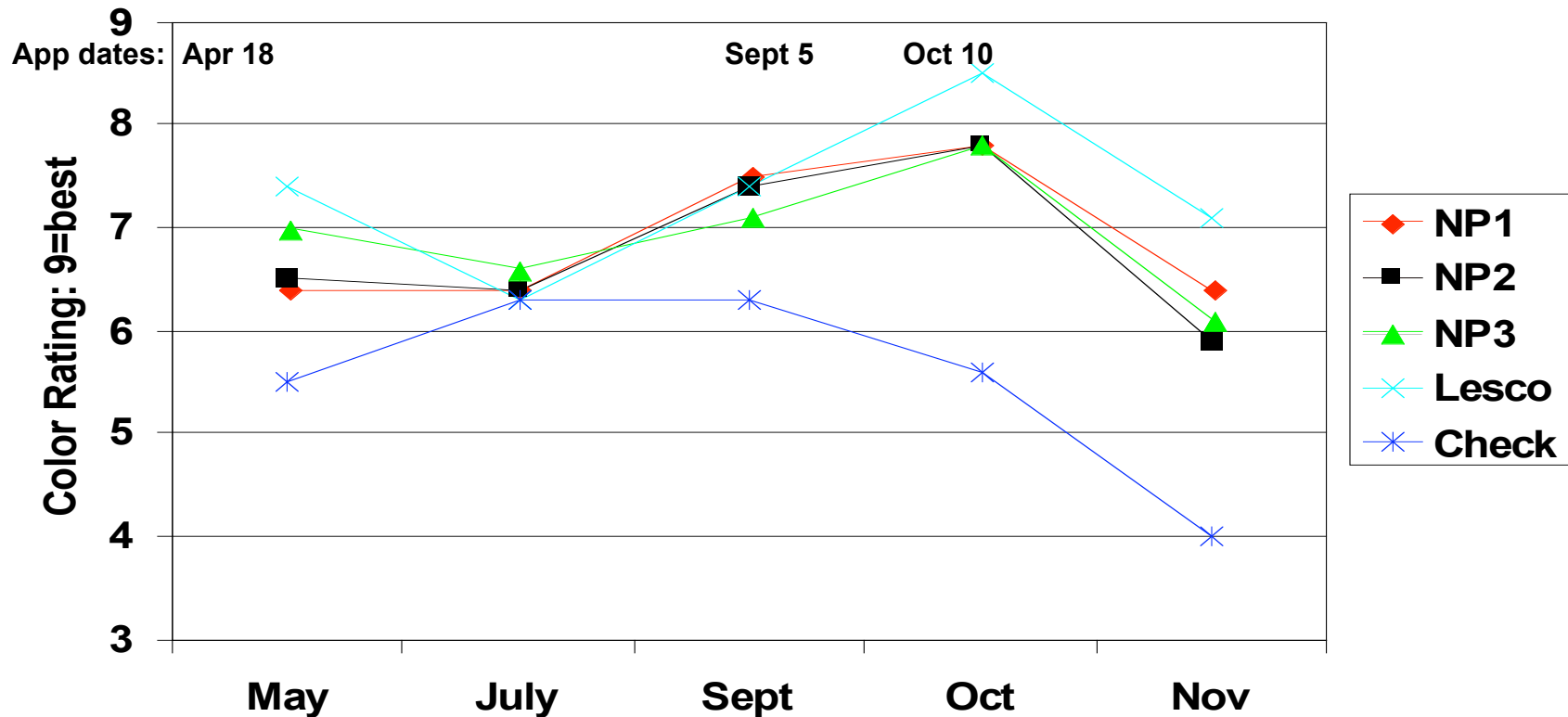
Comments: In July the NP3 program had higher CEC, while by Nov the NP1 and NP2 programs had greater soil CEC. Such slight increases in CEC due to the NP programs may have contributed to color responses equivalent to Lesco with less applied N.

Souble Soil N of Tall Fescue in Blacksburg: 2008



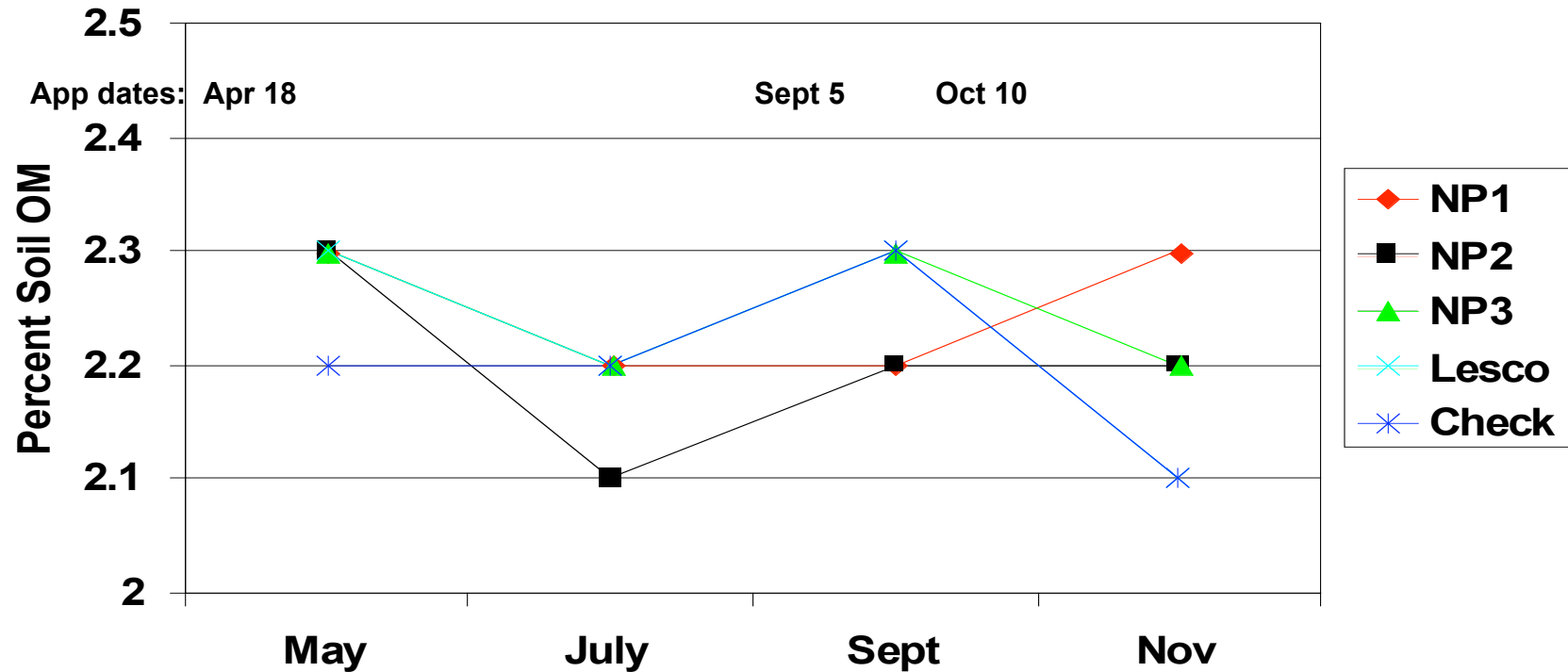
Comments: available soil N began the season with high variability across treatments, evened out during the summer season, and ended with NP1 and Lesco having significantly more in November. More soil available N should have translated to greater N uptake and color for these two treatments, but this result was not consistent.

Color Response of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



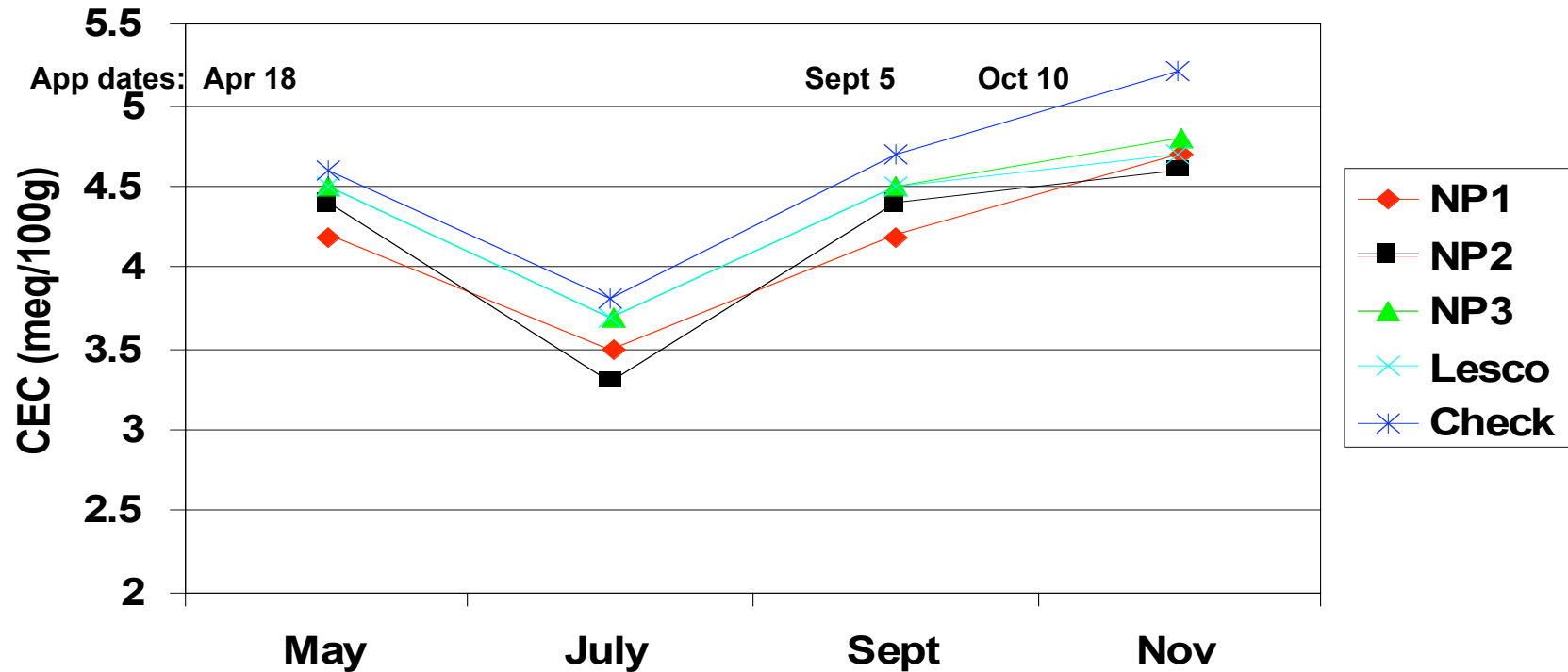
Comments: Best color response on May 2 was seen for the NP3 and Lesco programs, then responses evened out through Sept 10, with color being greatest on the Oct rating date for Lesco. This is not surprising given that the Lesco treatment received 1.5 lb N on Oct 10, while the NP treatments only received 0.7 lb N. Overall, acceptable turf color was maintained with the NP programs that supplied 2.1 to 2.4 lbs N/M over the season, although 3.5 lbs from the Lesco program proved to be slightly superior.

Soil Organic Matter (0-2") of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



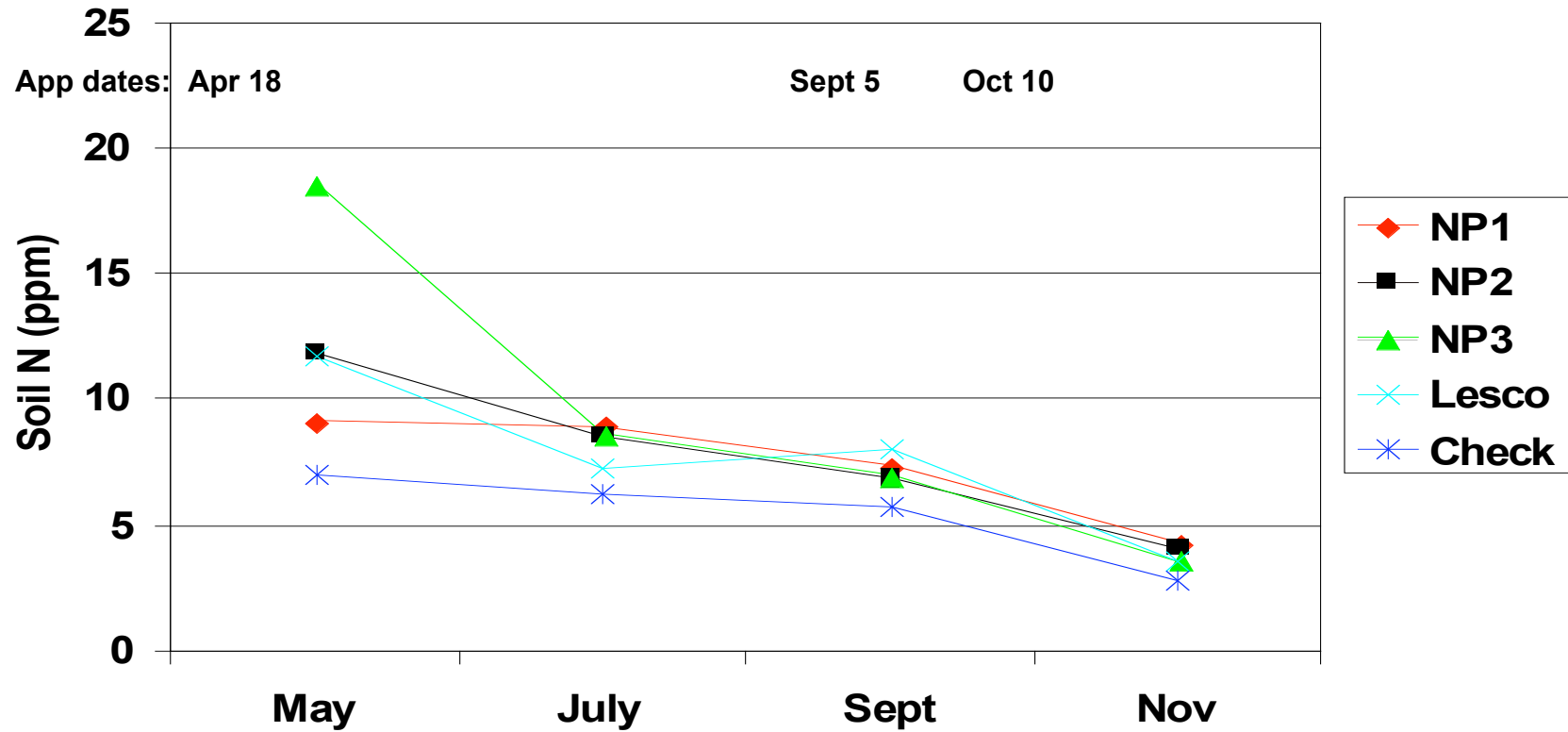
Comments: No meaningful differences in soil OM were measured due to any program in 2008.

Cation Exchange Capacity of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



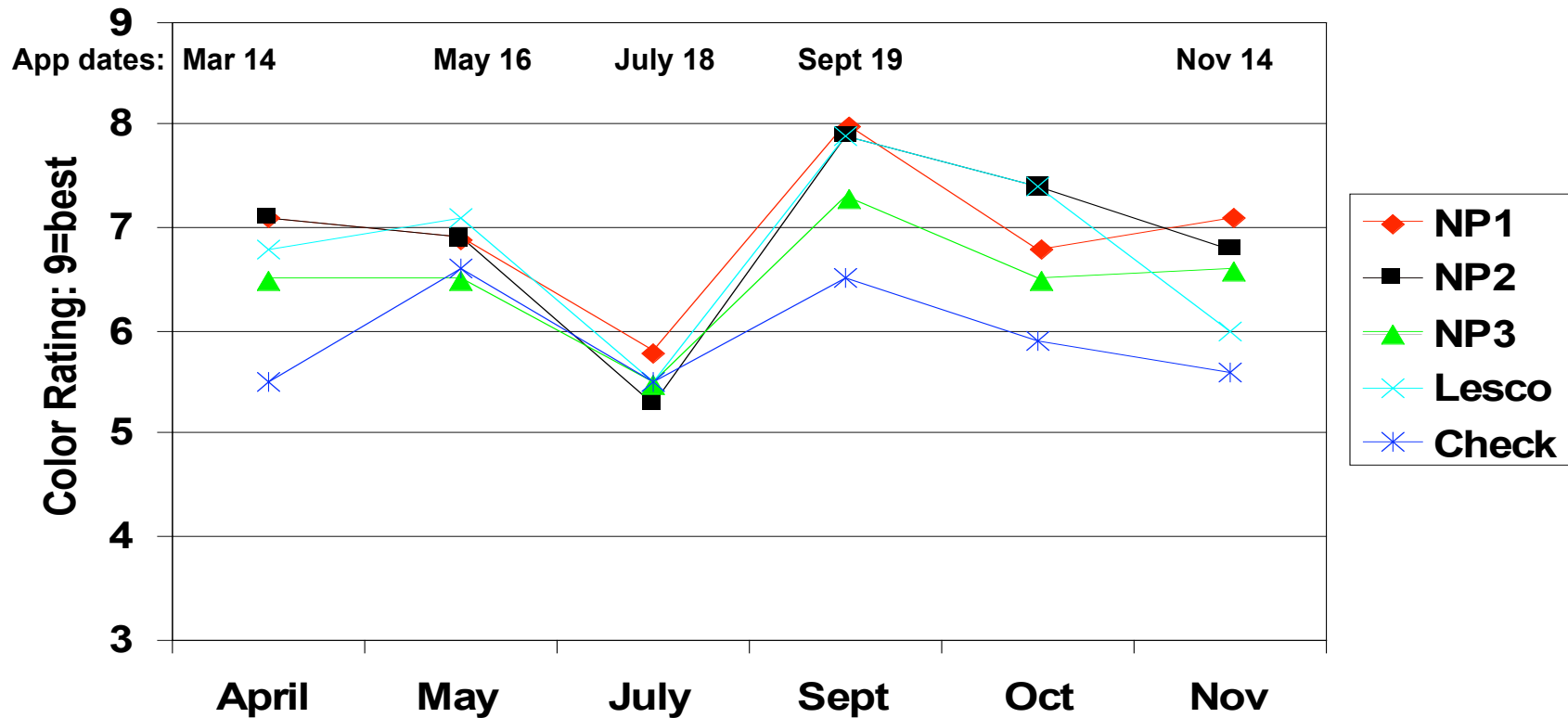
Comments: Interestingly, the check had a higher CEC throughout much of the season the fertilizer programs. These slight increases, however, did not correspond to better turf color or quality for the check over the season.

Soube Soil N of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



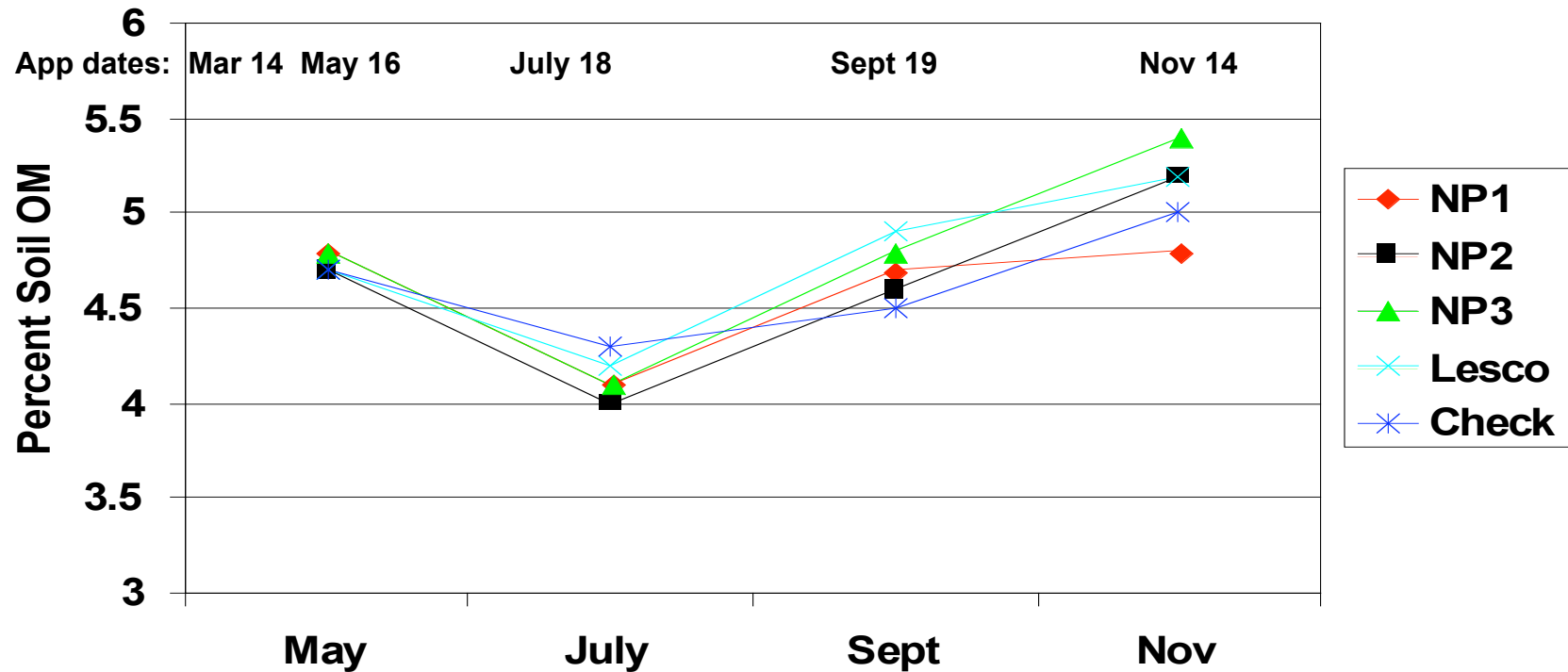
Comments: These data provide no information as to differences in visual turf performance.

Color Response of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



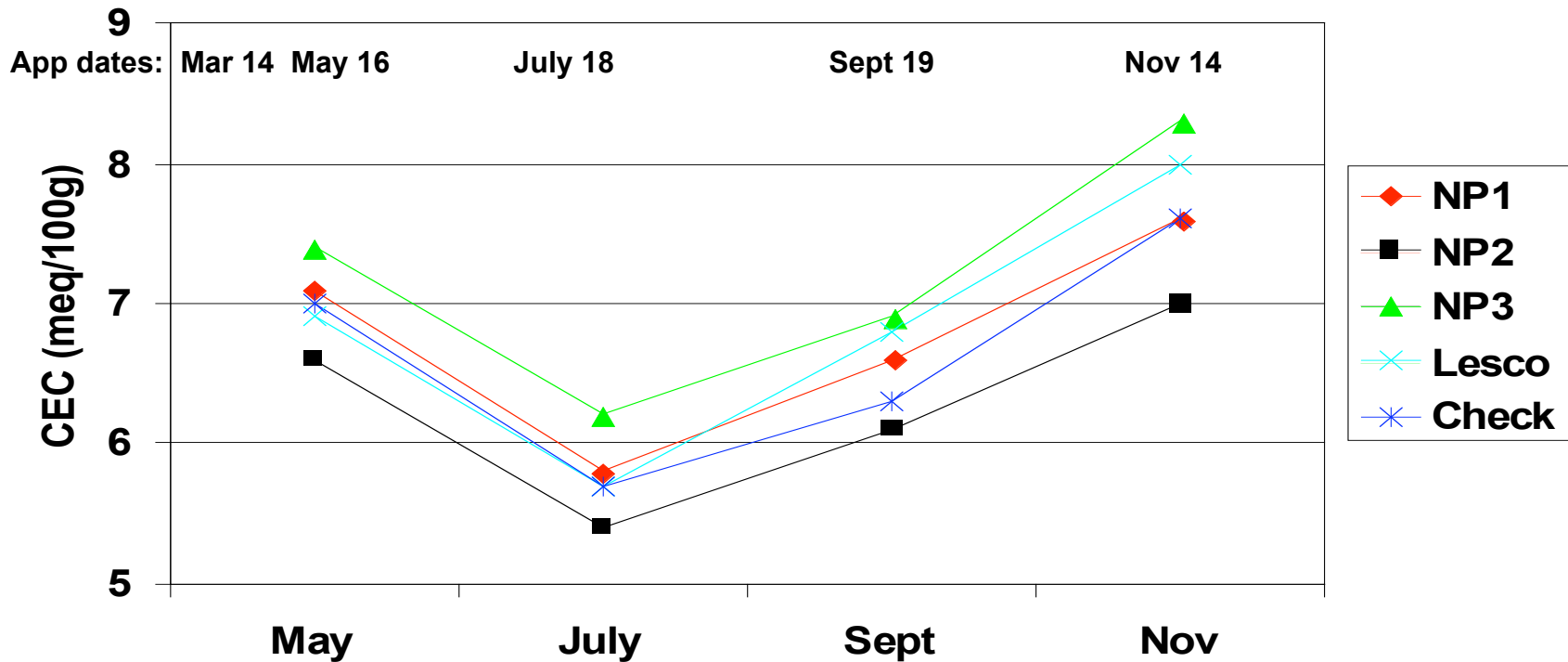
Comments: All fertilizer programs provided darker green turf in the fall compared to the check, with NP1 outperforming Lesco on the Nov 11 rating date, indicating that the Titan application of Sept 19 provided a longer residual than Lesco.

Soil Organic Matter (0-2") of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



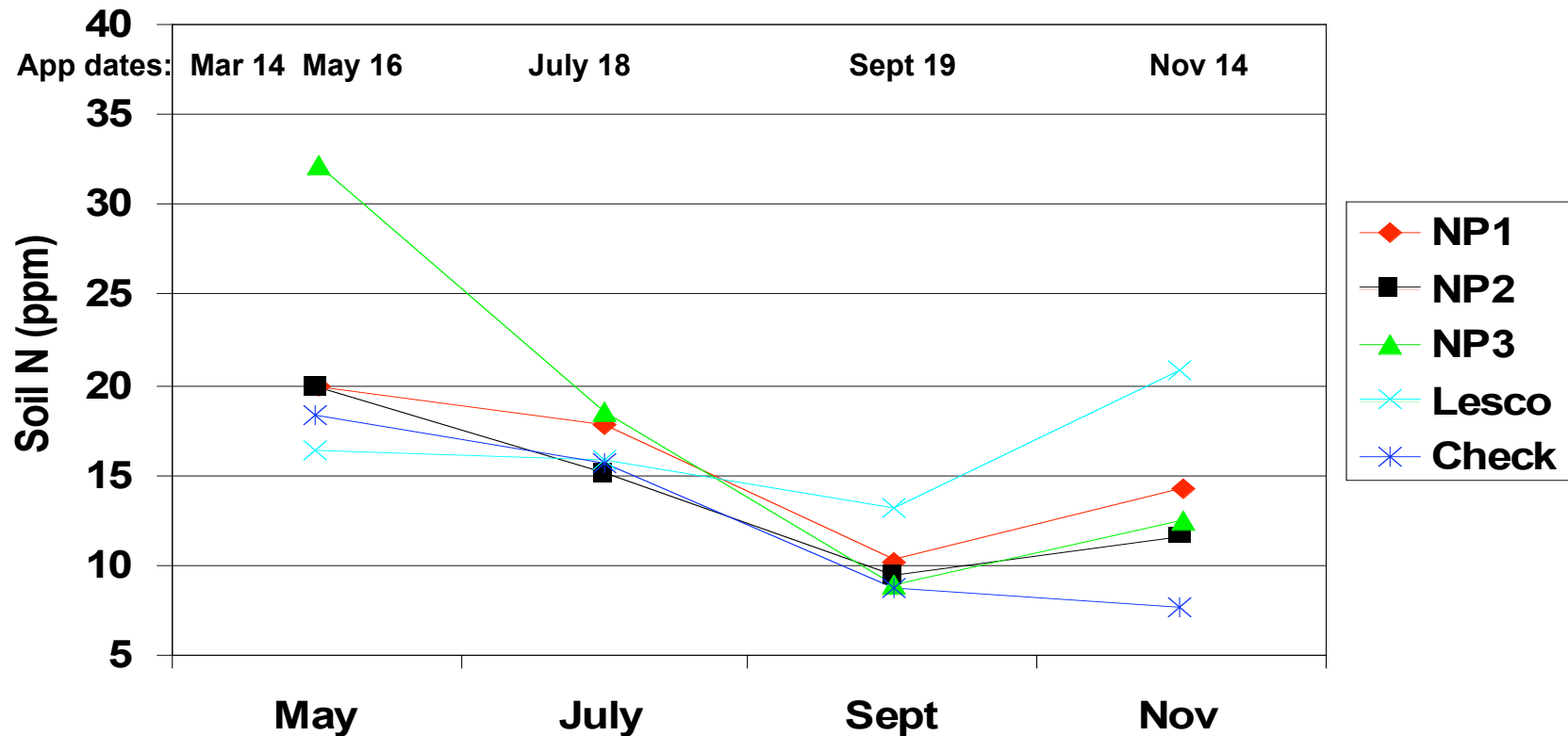
Comments: No differences between treatments were measured over the season. However, by the Nov sampling the NP3 (20 lb OM) treatment was showing a trend towards increased soil OM. We'll see if this trend continues in 2009.

Cation Exchange Capacity of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



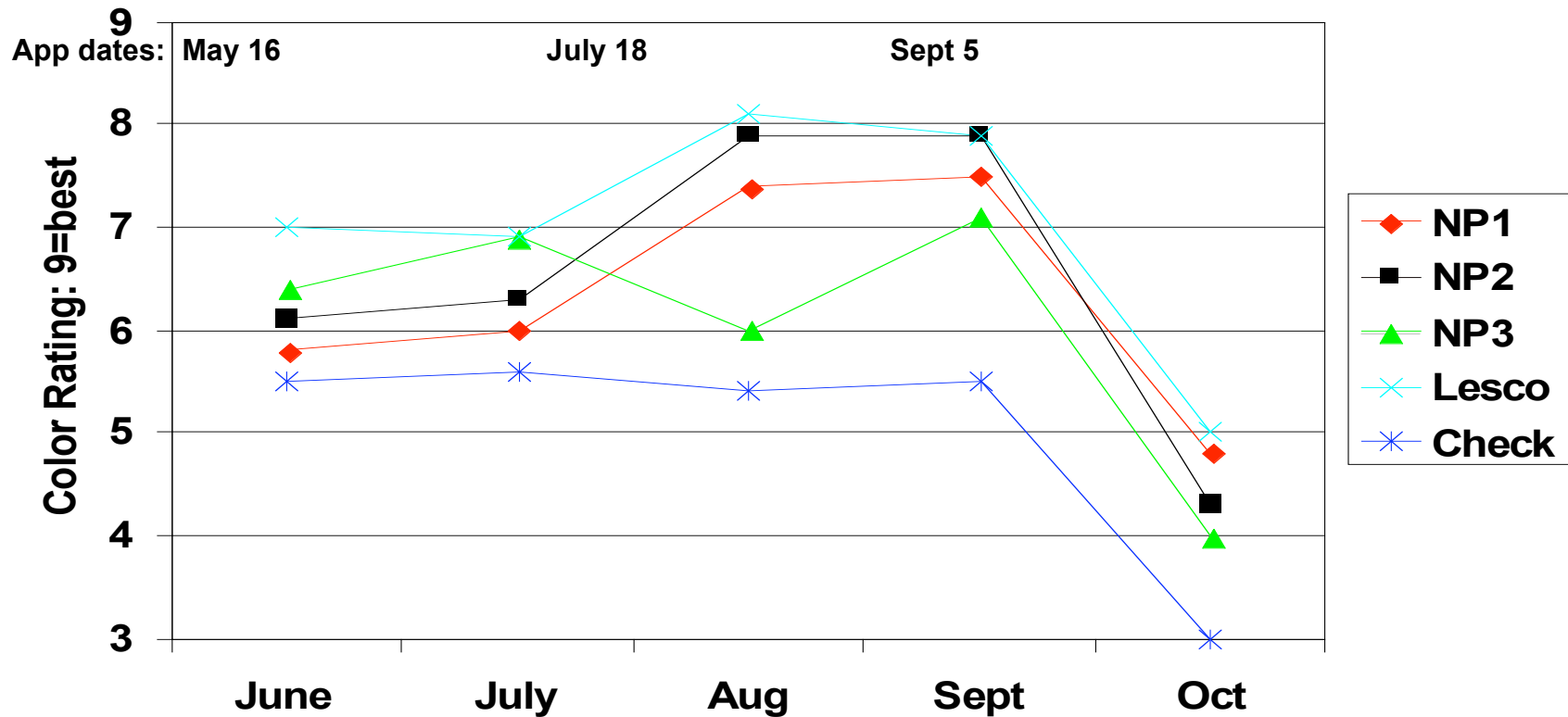
Comments: As with soil OM, by the Nov sampling the NP3 (20 lb OM) treatment had resulted in significantly greater CEC relative to the check, NP1, and NP2.

Soube Soil N of Kentucky Bluegrass/ Perennial Ryegrass in Blacksburg: 2008



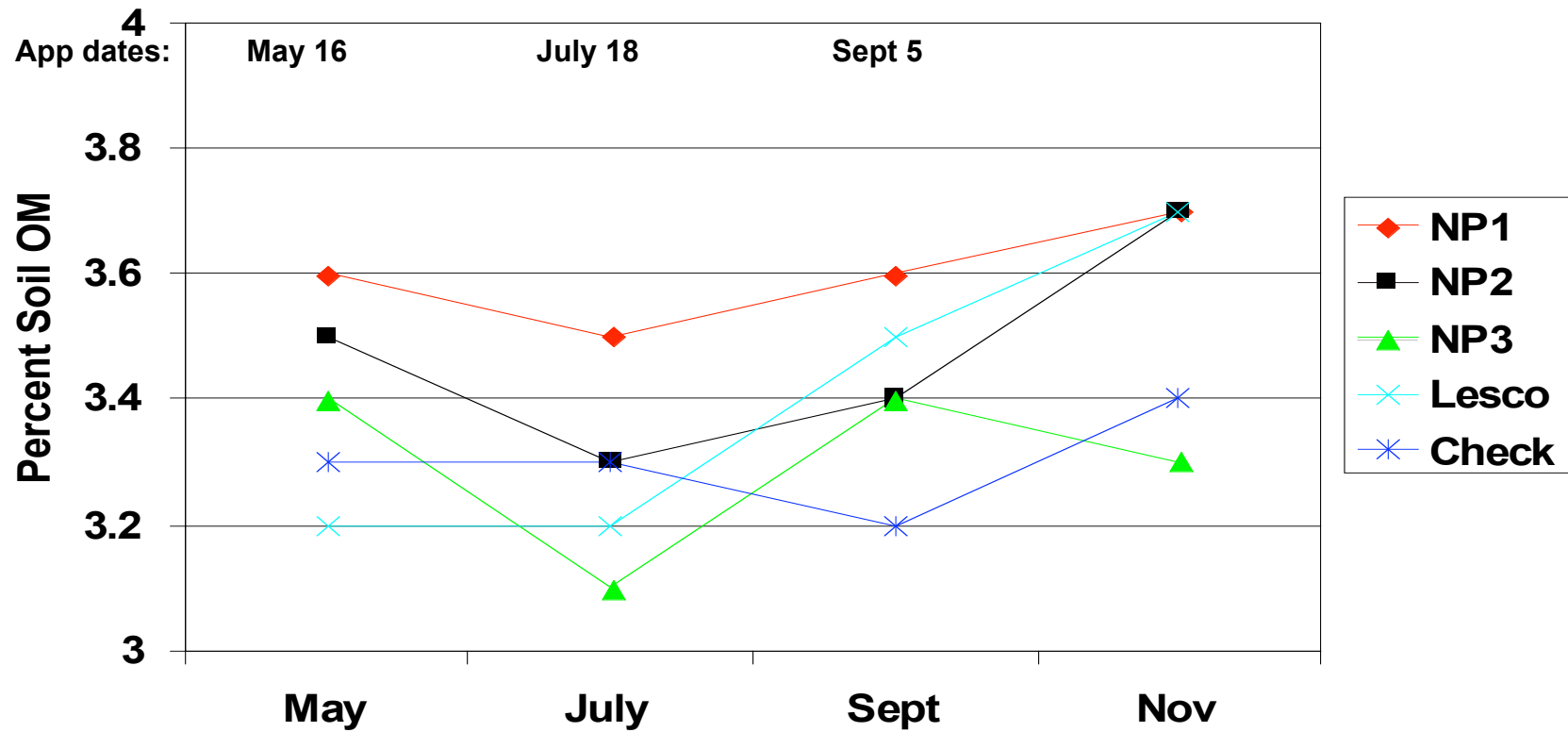
Comments: Lesco had more residual soil N on the Nov 28 sampling date than the other treatments, most likely associated with the 1 lb N rate relative to the 0.7 and 0.8 lb N NP rates applied on Nov 14. Such a response may likely contribute to faster spring greenup. Initial color ratings on March 19, 2009 showed exactly that: the Lesco plots had an average color of 7.4, while the NP plots averaged 6.

Color Response of Bermudagrass in Blacksburg: 2008



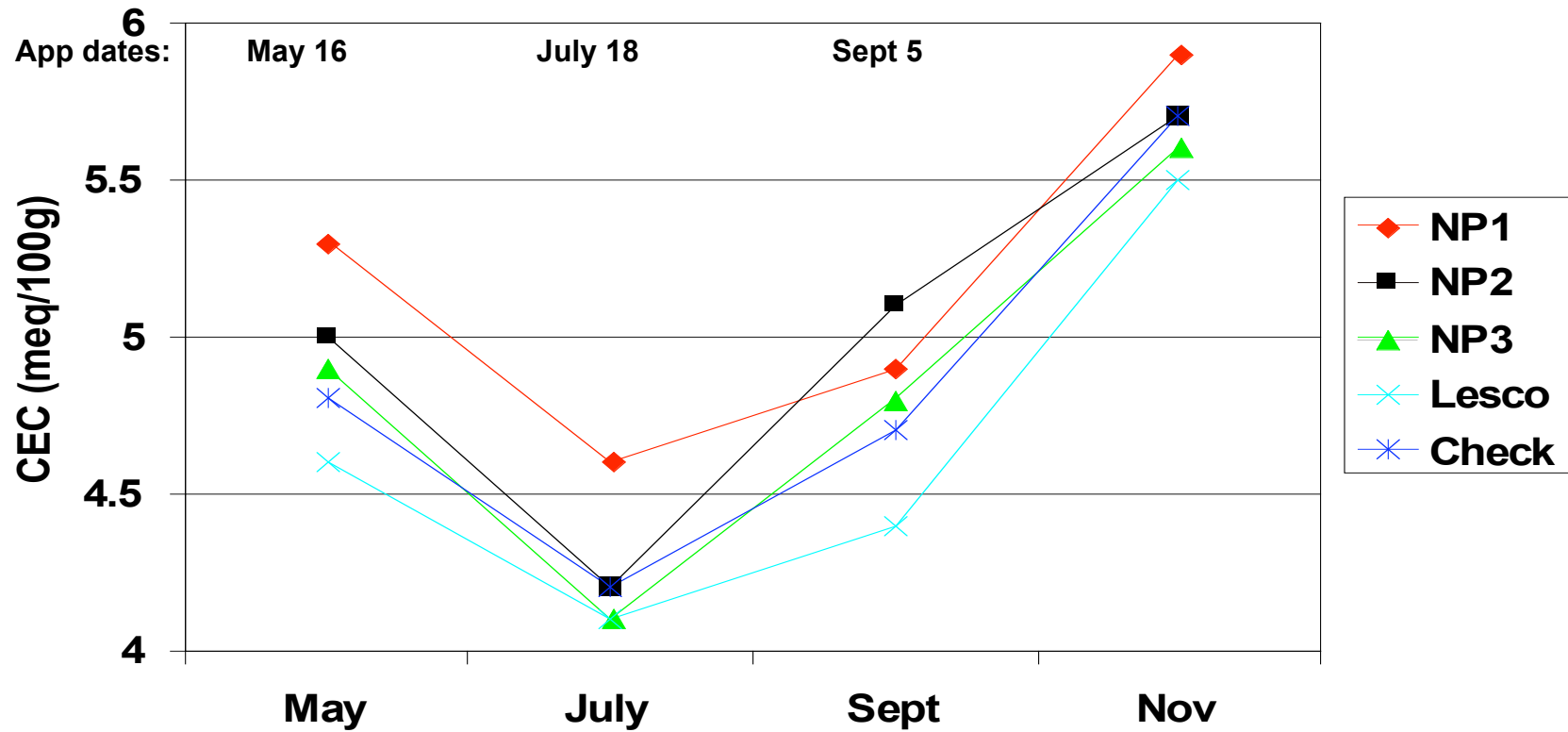
Comments: Applying merely 0.46 lb N for the NP3 program on July 18 relative to 1 lb in NP1 and NP2 or 1.5 lb for Lesco resulted in a significant drop in color at the early Aug rating. Otherwise the NP programs at a total of 2 to 2.3 lbs N of N over the season relative to 3.5 lbs for Lesco, provided fairly equivalent color.

Soil Organic Matter (0-2") of Bermudagrass in Blacksburg: 2008



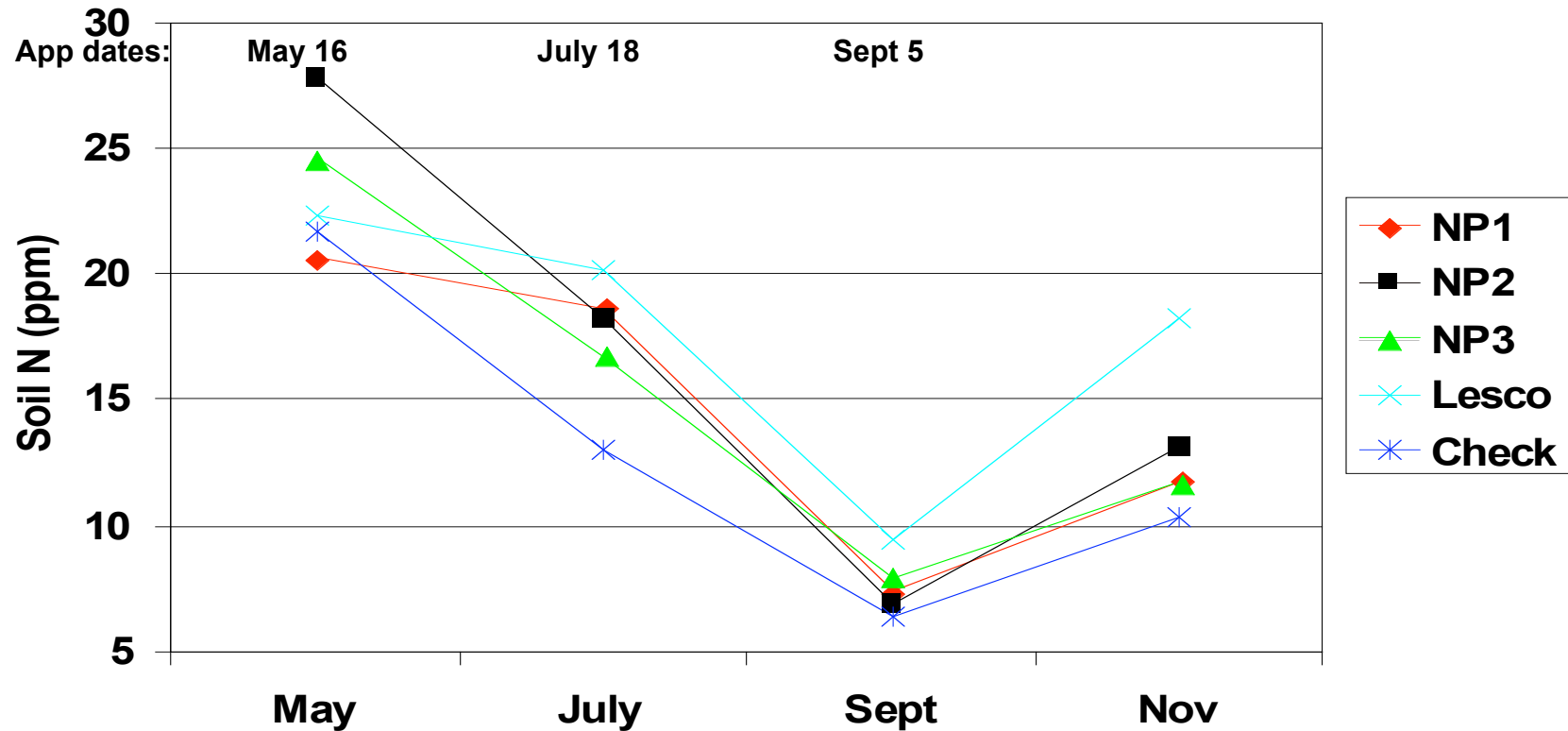
Comments: Adding higher amounts of OM via NP fertilizers (e.g., NP3 at 20 lbs OM) was not associated with accumulating soil OM in this trial.

Cation Exchange Capacity of Bermudagrass in Blacksburg: 2008



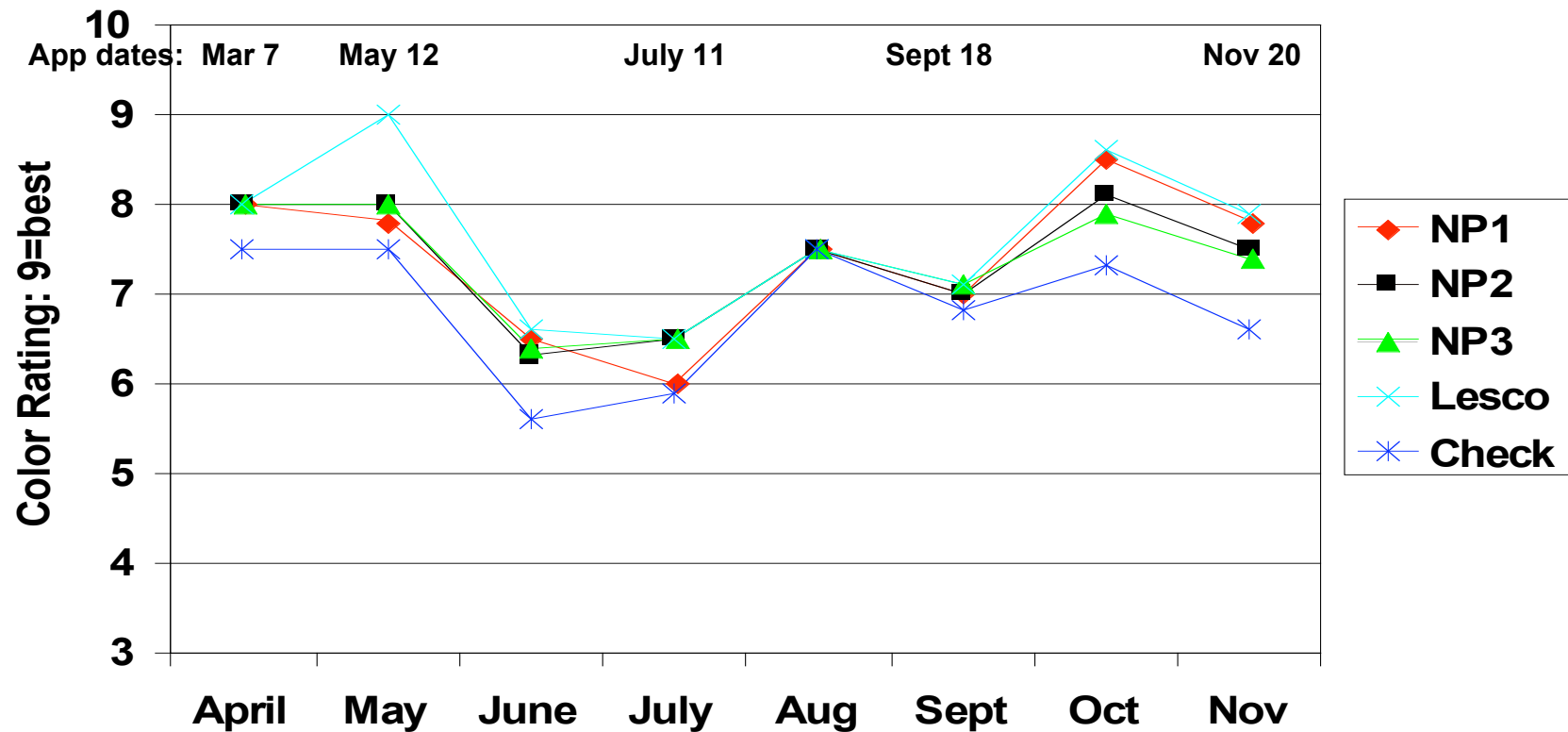
Comments: No statistically significant differences in CEC were measured due to treatment in 2008.

Souble Soil N of Bermudagrass in Blacksburg: 2008



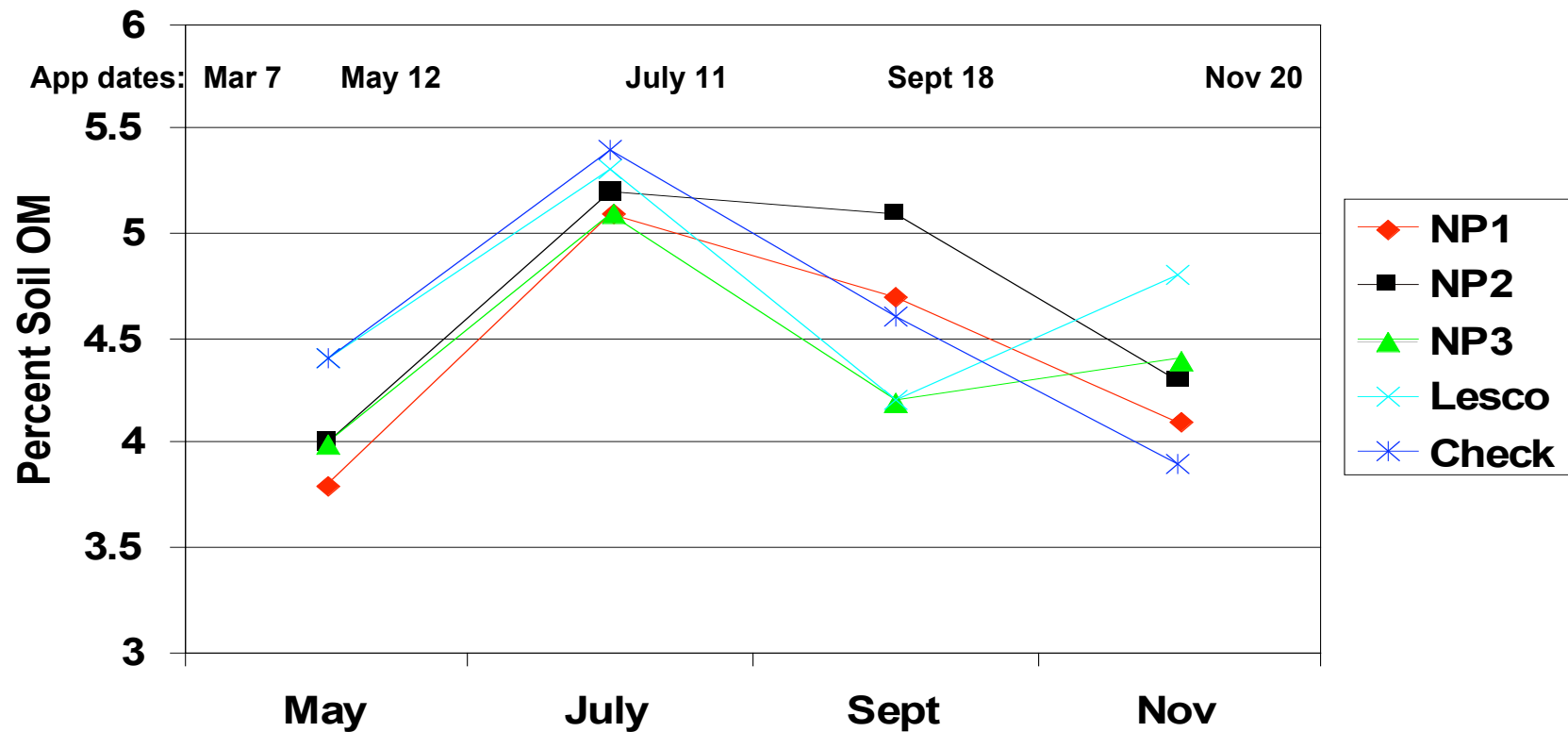
Comments: Applying 1 lb N on Sept 5 with Lesco rather than 0.55 to 0.6 lb N via the NP products resulted in more soluble soil N at the late Nov sampling date. This should correspond to faster spring 09 greenup on the Lesco plots. No ratings have been taken yet as insufficient greening has occurred to date (Mar 26).

Color Response of Tall Fescue in Virginia Beach: 2008



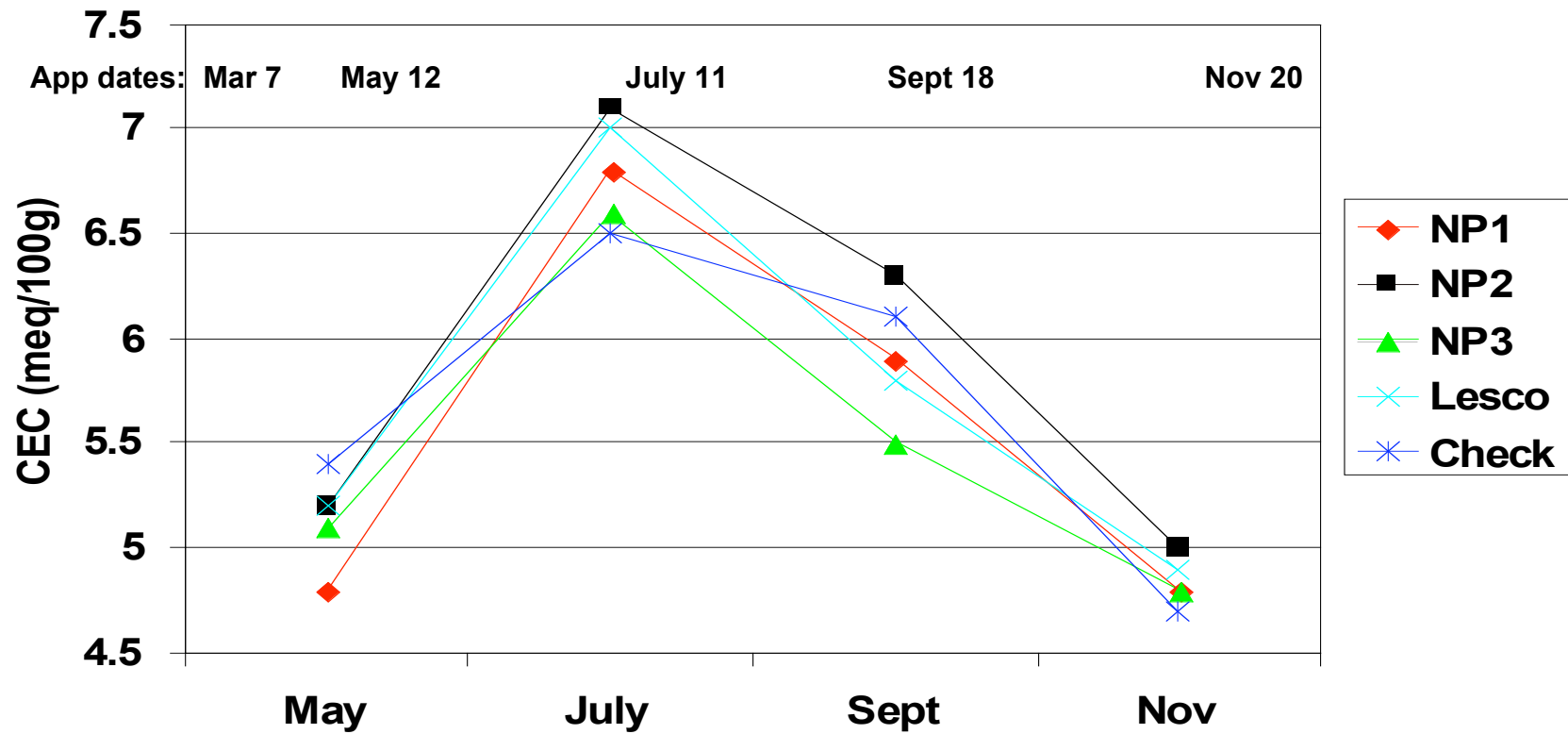
Comments: May 14 color response was significantly greater than the NP programs at 2 days after application. This is not surprising given a 100% natural organic fertilizer (NaturePure) was used on this date for the NP programs. Similar color responses across treatments were seen throughout the summer. All fertilizer treatments improved color through the fall with no clear winners.

Soil Organic Matter (0-2") of Tall Fescue in Virginia Beach: 2008



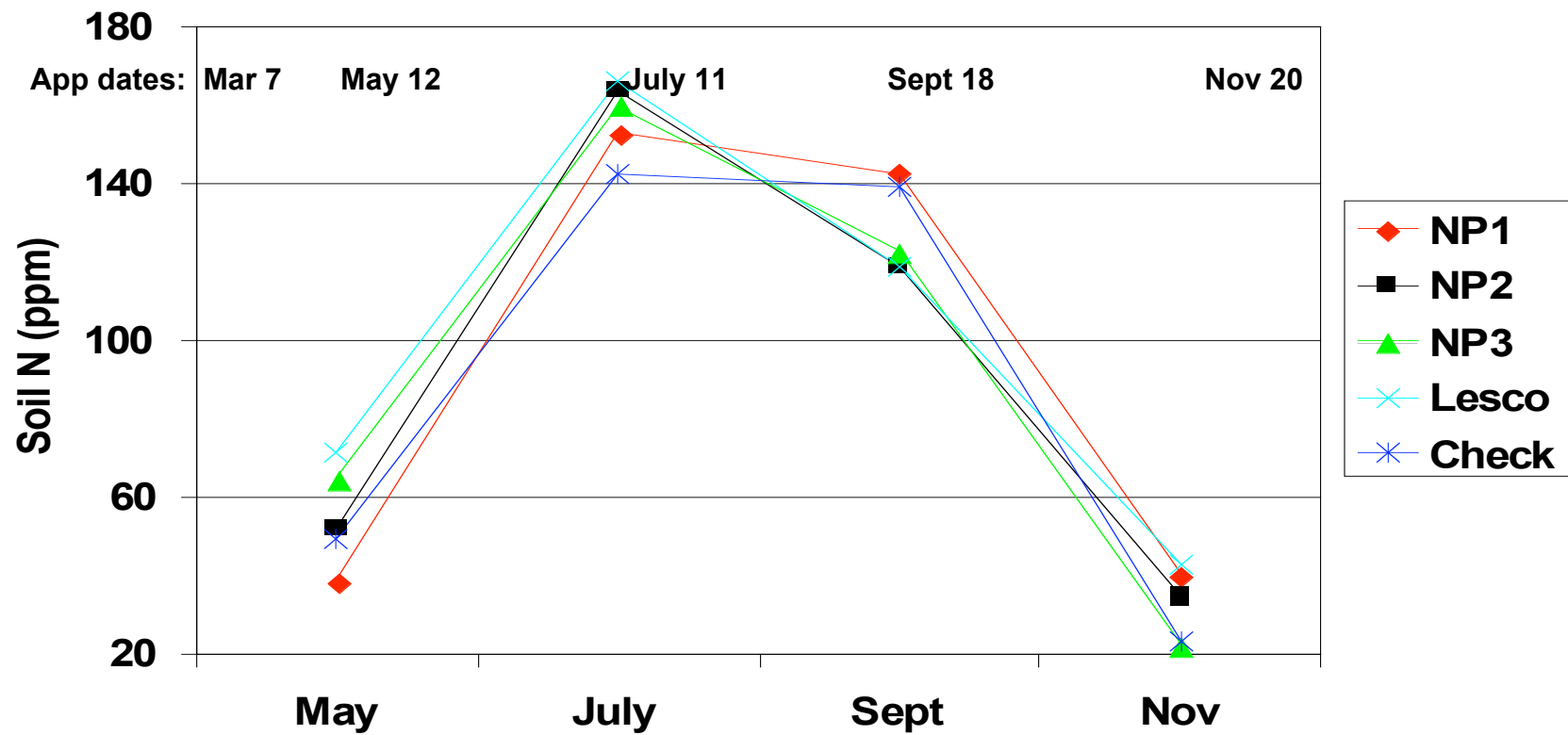
Comments: No statistically significant differences were measured due to treatment in 2008.

Cation Exchange Capacity of Tall Fescue in Virginia Beach: 2008



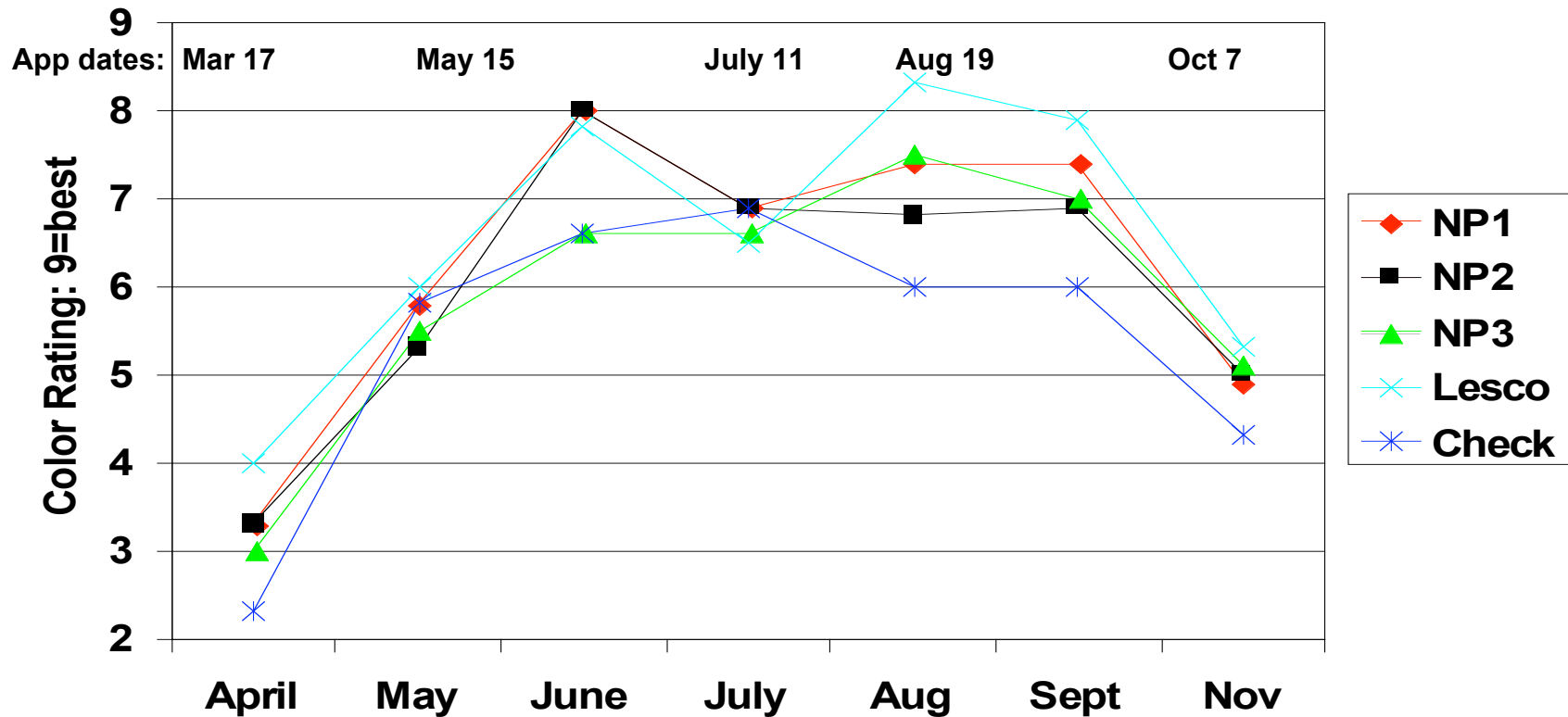
Comments: No statistically significant differences were measured due to treatment in 2008.

Souble Soil N of Tall Fescue in Virginia Beach: 2008



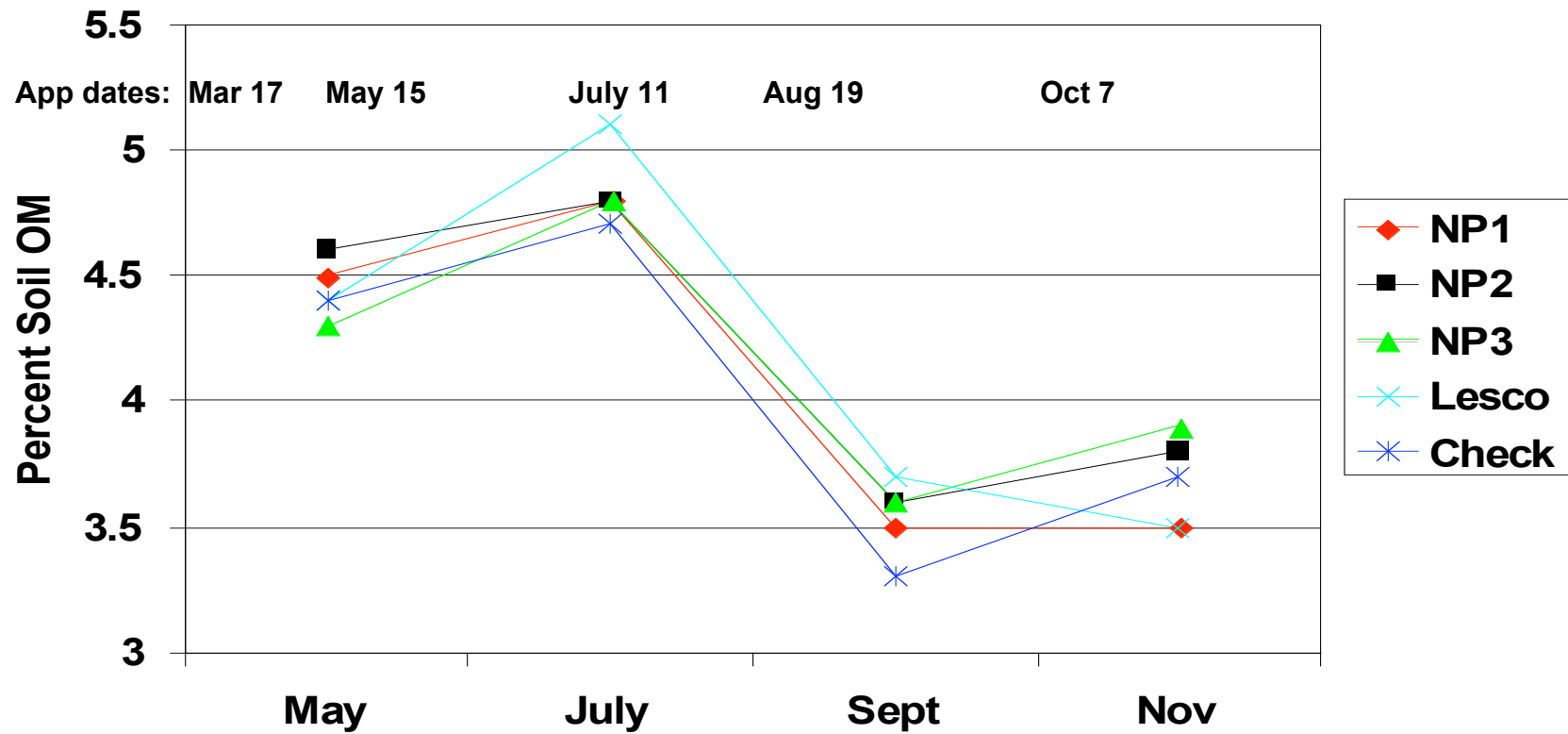
Comments: No statistically significant differences were measured due to treatment in 2008.

Color Response of Bermudagrass in Virginia Beach: 2008



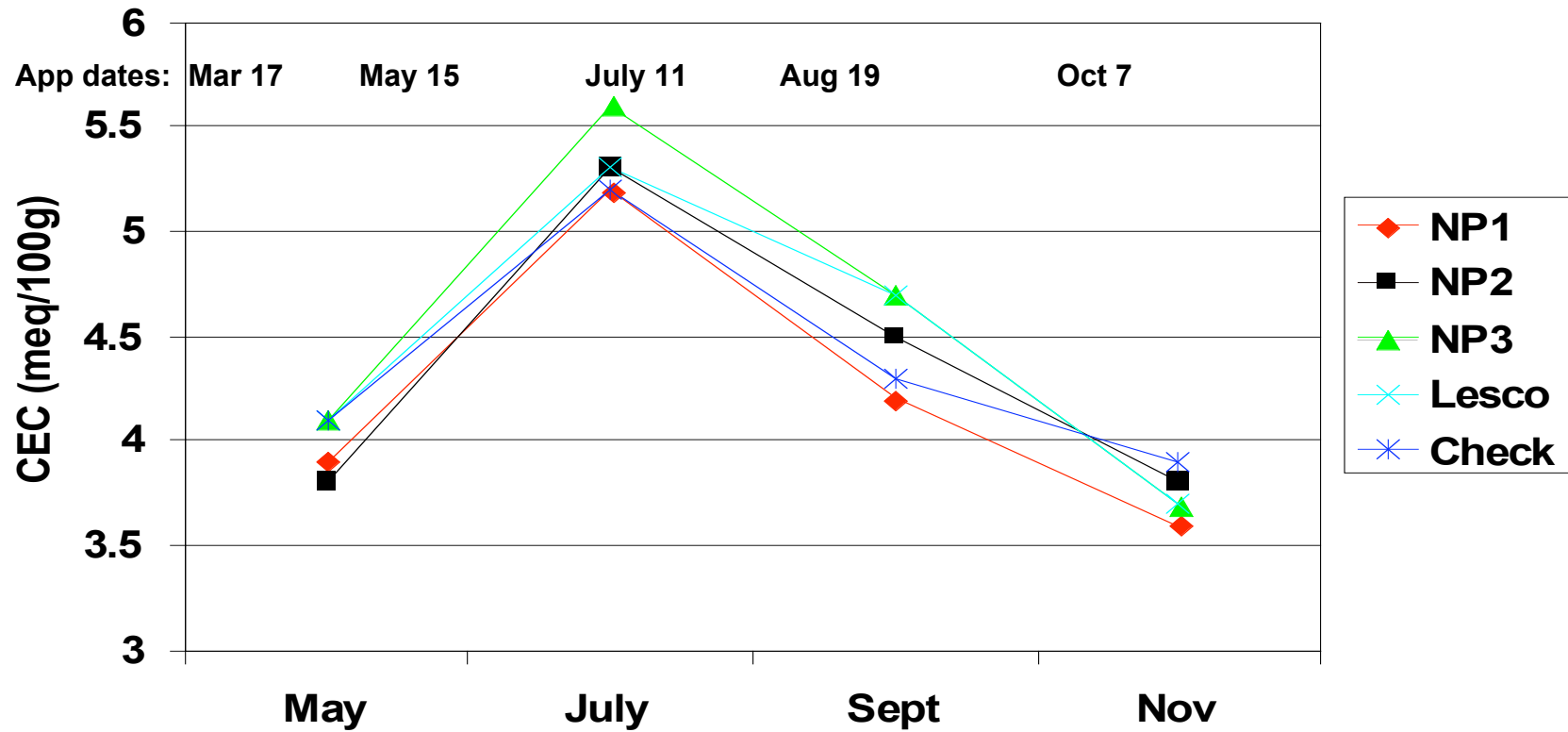
Comments: The NP3 program underperformed on bermuda at this site for most of the year, while the Lesco and then the NP1 program provided the most consistent color responses.

Soil Organic Matter (0-2") of Bermudagrass in Virginia Beach: 2008



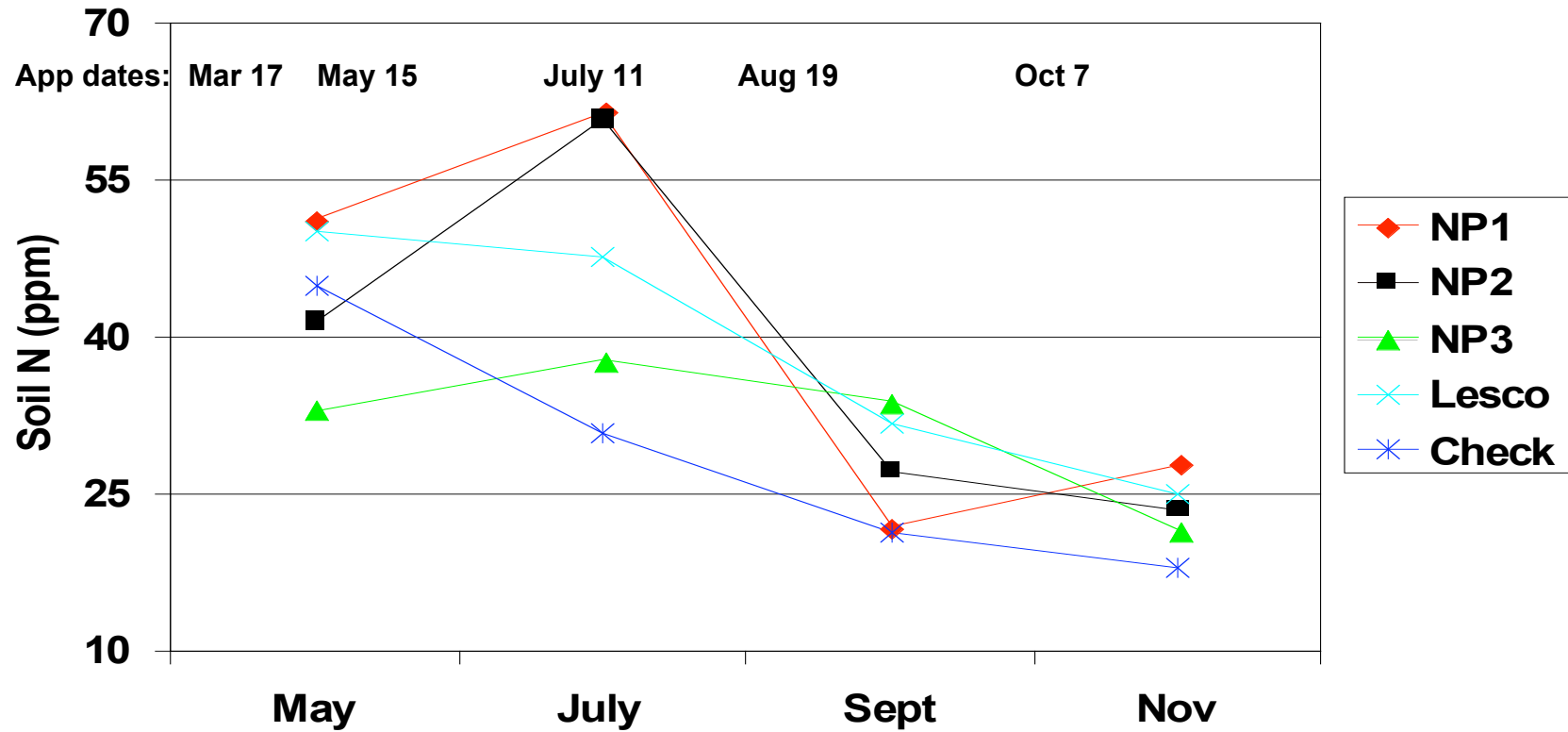
Comments: no interesting differences in soil OM due to programs.

Cation Exchange Capacity of Bermudagrass in Virginia Beach: 2008



Comments: no interesting differences in soil CEC due to programs.

Souble Soil N of Bermudagrass in Virginia Beach: 2008



Comments: lack of soluble soil N in July for the NP3 program was most likely reflected in its poor summer color response.