

APPENDIX F
Revised Procedures for 1999 Corn

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This document details the procedural modifications that will be made for the 1999 demonstration season. These modifications will be implemented based on experiences and lessons learned in the 1998 demonstration year. These modifications address hindrances due to the locale, growing conditions, choice of crops, and the basis and methods of soil amendments application.

1999 Corn

1. A high vegetative biomass silage variety of corn (Novartis Mycogen 345 hybrid) rather than a grain corn will be used. This variety was developed for growth on sandy soils in the region and exhibits a rapid early growth, which is desirable for a strong rooting system. Expected maximum yields for this variety under optimal agronomic conditions are six tons per acre. However, actual yields may be lower than this due to less than ideal growing conditions at TCAAP.
2. Planting will be done with a mechanical, tractor-mounted seed planter (Covington Model TP-46) to conserve labor and costs, and to achieve more uniform planting.
3. Planting density will be increased (i.e., 15-inch row spacing vs 30-inch spacing) to increase biomass production.
4. Fertilizer amounts of nitrogen (N) and potassium (K) will be increased over recommended agronomic rates to maximize biomass production under the conditions at TCAAP. Fertilizer will be applied as a two-way split application, with one-half the designated amount being soil-applied at planting and the rest applied approximately four weeks later. The total amount of N and K fertilizer to be added to each site will be 200 pounds per acre of N as ammonium nitrate and 150 pounds per acre of K as potassium sulfate.
5. The amount of phosphate applied to the soil at planting will be increased to reduce the chances for a reoccurrence of the P deficiency that was manifested in early corn in 1998. Site C will receive 44 pounds per acre of P as triple super phosphate (TSP) and Site 129-3 will receive 31 pounds per acre of P as TSP. The fertilizer will be applied as a band 2-1/2 inches to the side, and 2 inches below the seed row.
6. Chelate application rates will be based on the frequency of lead concentration across the plot area rather than on the mean lead concentration of the entire plot. The frequency of occurrence of lead concentration should be 20% to 30% less than the mean concentration. This will reduce the total amount of EDTA added to the plots, which will reduce the potential for carry-over damage to a subsequent crop. The total amount of EDTA to be applied at Site C may be from 4,725 pounds to 5,400 pounds per plot. The amount of EDTA at Site 129-3 may range from 595 pounds to 680 pounds per plot. This is in contrast to the 6,750 pounds of EDTA per plot at Site C for corn (3,375 pounds for white mustard) and 850 pounds at Site 129-3. The amount of acetic acid applied (4,018 pounds per plot) will stay the same. The EDTA will be applied in 5,000 gallons of solution at each site.

7. Soil amendments (acetic acid and EDTA) will be applied via a drip delivery system consisting of 90-ft lengths of drip tubing connected every ten inches to a two-inch header (108 tubes). The tubing network will extend across the entire field parallel with the corn rows. This will allow adequate saturation of the soil with the amendment solutions in a short period of time (approximately 2 hours). This system contrasts with the previous system in that the number of tubes (108) will be triple that used with the white mustard in 1998.
8. Deep tilling will be performed and artificial irrigation will be reduced after the corn harvest to maintain lead within the rooting zone for the following cool season crop.