

SOIL TEST REPORT UPDATE - 1982

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In the spring of 1982 we introduced for forage producers computerized recommendations for corn silage, alfalfa haycrop, and grass-legume haycrop and pasture. These recommendations are based upon a computerized interpretation of your soil analysis results. As before the top half of the report presents the results of your soil analysis and the lower half the recommendations. All reports for commercial operations (agronomic and horticultural crops) now have a refined limestone recommendation which provides information on the total limestone requirement, economic application and the type of limestone to apply based upon the magnesium soil test. For certain crops limestone applications and minimum soil pH before application is crop specific. This can be incorporated for more crops as fertilizer recommendations for further crops are added into the computer program. Compare the limestone recommendations in Figures 1, 2 and 3, where the soil analysis results are the same in each case as shown in Figure 1.

Nitrogen fertilizer recommendations for non-legume crops are given as a maintenance treatment on the basis of crop removal because nitrogen must be applied each year. The amount of nitrogen recommended for corn silage (Fig. 1) includes both the amount applied in the row and that added as a supplemental treatment. A range of 140-180 lb N per acre is given with the suggestion that the lower rate be used for less productive sites where a corn crop is expected to yield 16 to 18 tons per acre of 30% dry matter silage. The upper nitrogen rate is recommended where corn silage yields are expected to be 25 or more tons per acre. For grass haycrop and pasture (Fig. 3) maintenance nitrogen refers to topdressed nitrogen.

Fertilizer recommendations for phosphate and potash are designed to replace the nutrients used by the crop and to maintain desired soil test levels in the medium to high fertility range. When soil test levels of phosphate and potash are very high, the recommended fertilizer rate will be reduced. The minimum recommended additions for corn silage are 0-10 lb of phosphate per acre and 50-60 lb of potash per acre. To illustrate that such recommended rates are still adequate consider the minimum recommendation of potash for a 25 ton corn silage crop. This crop would remove at harvest 220 lb per acre equivalent of potash (K₂O). For a sandy soil with little organic matter and a cation exchange capacity of approximately 5 meq/100 gm of soil, it is not until the potash reserves in the surface 6" to 7" of soil reach more than 280 lb per acre that only the minimum potash recommendation is made. In a finer textured soil with more organic matter and with a CEC of about 15 meq, the reserve of potash must exceed 340 lb per acre before the potash recommendation falls to the minimum recommended rate.

Certain other cultural information is supplied with the fertilizer recommendations for these forage crops. For perennial forages (Figs 2 & 3) this includes establishment and maintenance fertilizer rates and time of application. For corn silage (Fig. 1) it includes a suggestion of starter fertilizer for early plantings and guidelines for adjusting fertilizer

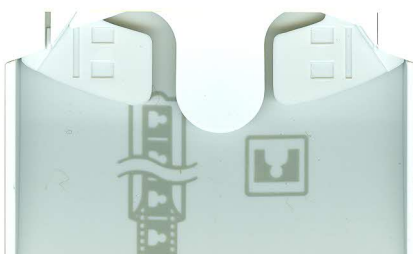


Figure 1.

SOIL ANALYSIS REPORT FOR AGRONOMIC AND VEGETABLE CROPS 07/14/82

S. HERBERT UNIVERSITY OF MASSACHUSETTS
 STOCKBRIDGE HALL SOIL AND PLANT TISSUE LAB
 UMASS, AMHERST 01003 240 BEAVER STREET
 HAMPSHIRE WALTHAM, MA 02254

---BAG_NO.---!---LAB_NO.---!---DATE_SENT---!---SOIL_TYPE---!---CROP---
 027814 !S070682102 5.72! 061882 ! ! CORN

SOIL TEST RESULTS : FOR FIELD SAMPLE NO. 1

SOIL_PH_!_BUFFER_PH_!_CATION_EXCH_CAP_!_PERCENT_SATURATION_-----
 6.1 ! 6.6 ! 7.5 MEQ/100G ! K= 2.3 MG=11.2 CA=37.7

NUTRIENT_LEVELS_:_PPM_!_LOW_-----MEDIUM_-----HIGH_-----VERY_HIGH
 PHOSPHORUS (P) 14. !XXXXXXXXXXXXXXXXXXXXXXXXXXXX
 POTASSIUM (K) 75. !XXXXXXXXXXXXXXXXXXXXXXXXXXXX
 CALCIUM (CA) 644. !XXXXXXXXXXXX
 MAGNESIUM (MG) 116. !XXXXXXXXXXXXXXXXXXXXXXXXXXXX
 AMMONIUM (NH4) 3.0 PPM NITRATE (NO3) 15.0 PPM

MICRONUTRIENT_---PPM_---SOIL_RANGE_ MICRONUTRIENT_---PPM_---SOIL_RANGE_---
 BORON (B) .2 0.1-2.0 COPPER (CU) .1 0.3-8
 MOLYBDENUM (MO) <0.1 0.1-3.0 IRON (FE) 5.0 1-40
 ZINC (ZN) .7 0.1-70 MANGANESE (MN) 2.3 3-20

APPLICATION OF MICRONUTRIENTS SOLELY ON THE BASIS OF THIS SOIL TEST IS NOT RECOMMENDED.

SUBSTANCES THAT CAN BE TOXIC TO PLANTS
 ALUMINUM (AL) 49. PPM SOIL RANGE 0-200 SOLUBLE SALTS *****

ELEMENTS THAT ARE NOT REQUIRED BY PLANTS BUT CAN BE TOXIC TO PEOPLE
 ARSENIC (AS) 0. PPM SOIL RANGE 0-? CADMIUM (CD) 0. PPM SOIL RANGE 0-?
 LEAD (PB) 2. PPM ESTIMATED TOTAL LEAD IS 20. PPM WHICH IS LOW

-----RECOMMENDATIONS FOR CORN SILAGE: *****NEWLY RELEASED*****

LIMESTONE REQUIREMENT IS 2.8 TONS PER ACRE OR 130 LB PER 1000 SQ. FT.
 A CALCITE LIMESTONE IS ACCEPTABLE SINCE SOIL MAGNESIUM IS HIGH.

APPLY 140-180 LB/ACRE NITROGEN USING LOWER RATE FOR LESS PRODUCTIVE SOILS.

APPLY 40- 50 LB/ACRE P205 AND 210-220 LB/ACRE K20.
 USE A STARTER FERTILIZER IF PLANTING BEFORE MAY 15.
 BAND MOST IF NOT ALL PHOSPHORUS AT PLANTING. DO NOT
 BAND MORE THAN 60-80 LB/ACRE NITROGEN PLUS POTASSIUM.

DECREASE N-P205-K20 BY 5-3-6 LB/ACRE FOR EACH TON OF DAIRY MANURE USED IF
 IMMEDIATELY INCORPORATED, 2-3-6 PER TON IF NOT INCORPORATED WITHIN 2 DAYS.
 IF CORN FOLLOWS ALFALFA REDUCE NITROGEN BY 60 LB/ACRE.
 IF CORN FOLLOWS BIRDSFOOT TREFOIL OR CLOVER REDUCE NITROGEN BY 40 LB/ACRE.

COPIES OF YOUR RESULTS WERE SENT TO:

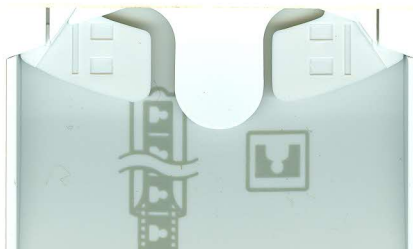


Figure 2.

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RECOMMENDATIONS FOR ALFALFA HAY CROP: ***NEWLY RELEASED***

LIMESTONE REQUIREMENT IS 2.8 TONS PER ACRE OR 130 LB PER 1000 SQ. FT.
 A CALCITE LIMESTONE IS ACCEPTABLE SINCE SOIL MAGNESIUM IS HIGH.

** RECOMMENDATION FOR ALFALFA ESTABLISHMENT - 5 TON PER ACRE YIELD **
 APPLY 90-100 LB/ACRE P205 AND 270-280 LB/ACRE K20.
 SPLIT K20, APPLY HALF AT SEEDING, REMAINDER AFTER SECOND CUT.
 RECOMMENDED K20 FOR FIRST YEAR AFTER SEEDING YEAR 340 LB/ACRE.
 USE A FERTILIZER CONTAINING BORON TO SUPPLY 2-3 LBS/ACRE OF BORON ANNUALLY.

** RECOMMENDATION FOR TOPDRESSING ESTABLISHED ALFALFA - 5 T/A YIELD **
 APPLY 20- 30 LB/ACRE P205 AND 330-340 LB/ACRE K20.
 SPLIT K20, APPLY HALF AFTER FIRST CUT, REMAINDER AFTER SECOND OR THIRD CUT.
 USE A FERTILIZER CONTAINING BORON TO SUPPLY 2-3 LBS/ACRE OF BORON ANNUALLY.

INCREASE OR DECREASE N-P205-K20 BY 0-15-50 LB/ACRE FOR EACH TON CHANGE
 IN EXPECTED YIELD.

COPIES OF YOUR RESULTS WERE SENT TO:

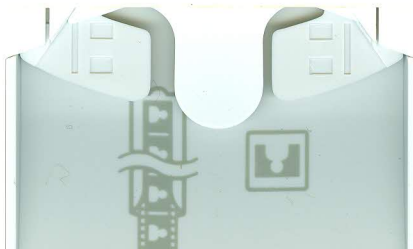


Figure 3.

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RECOMMENDATIONS FOR GRASS-LEGUME HAY AND PASTURE: ***NEWLY RELEASED***

LIMESTONE REQUIREMENT IS 2.8 TONS PER ACRE OR 130 LB PER 1000 SQ. FT.
 A CALCITE LIMESTONE IS ACCEPTABLE SINCE SOIL MAGNESIUM IS HIGH.

*** RECOMMENDATION FOR GRASS-LEGUME ESTABLISHMENT ***
 APPLY 0-50 LB/ACRE NITROGEN, USING LOWER RATE IF LEGUME IS INCLUDED.
 APPLY 20- 30 LB/ACRE P205 AND 140-150 LB/ACRE K20. RECOMMENDED K20 FOR
 FIRST YEAR AFTER SEEDING YEAR 100 LB/ACRE. USE NITROGEN RATES BELOW.

*** RECOMMENDATION FOR TOPDRESSING ESTABLISHED GRASS-LEGUME HAYCROP ***
 APPLY NITROGEN IF LESS THAN 50 PERCENT LEGUME: 50 LB/ACRE EARLY SPRING,
 50 LB/ACRE AFTER FIRST CUT.
 APPLY 20- 30 LB/ACRE P205 AND 100-110 LB/ACRE K20.

*** RECOMMENDATION FOR TOPDRESSING ESTABLISHED GRASS-LEGUME PASTURE ***
 APPLY NITROGEN IF MOSTLY GRASS: 50 LB/ACRE EARLY SPRING & AGAIN IN AUGUST.
 APPLY 20- 30 LB/ACRE P205 AND 50- 60 LB/ACRE K20.

COPIES OF YOUR RESULTS WERE SENT TO:

