

1 Department of Agriculture

2

3 Adopted Permanent Rules Relating to Soil Testing Laboratory

4 Certification

5

6 Rules as Adopted

7 1512.0010 PURPOSE.

8 Parts 1512.0010 to 1512.0085 contain certification
9 procedures and standards for laboratories that offer soil
10 testing services and resulting fertilizer recommendations in
11 Minnesota.

12 1512.0015 DEFINITIONS.

13 Subpart 1. Scope. The definitions in this part apply to
14 parts 1512.0010 to 1512.0085.

15 Subp. 2. Certification. "Certification" means written
16 acknowledgment by the department of the laboratory's
17 demonstrated capability to perform soil testing procedures
18 within required limits and in compliance with parts 1512.0010 to
19 1512.0085.

20 Subp. 3. Check sample. "Check sample" means a processed
21 and prepared soil sample provided by the department to
22 laboratories for performance evaluation.

23 Subp. 4. Department. "Department" means the department of
24 agriculture.

25 Subp. 5. Enrollment period. "Enrollment period" means a
26 period in which laboratories not previously certified or
27 laboratories seeking initial certification after revocation may
28 submit an initial certification application and fees of
29 application and certification.

30 Subp. 6. Initial fee. "Initial fee" means the sum of the
31 application fee and the annual certification fee provided in
32 Minnesota Statutes, section 18C.141. This fee applies to
33 laboratories requesting certification for the first time and to
34 laboratories seeking certification after revocation.

35 Subp. 7. Lapsed. "Lapsed" means that fees have not been

1 paid or application submitted to the department in accordance to
2 the deadline, creating a condition for revocation of
3 certification.

4 Subp. 8. Method. "Method" means the type of analysis for
5 a given soil analysis.

6 Subp. 9. Procedure. "Procedure" means a series of
7 specific analytical steps for a given soil analysis method.

8 Subp. 10. Revoked. "Revoked" means that the department
9 has canceled certification status because of unacceptable check
10 sample performance or violation of law or rule.

11 Subp. 11. Soil analysis or soil test. "Soil analysis" or
12 "soil test" means a physical or chemical analysis offered by the
13 soil analysis industry.

14 Subp. 12. Soil analysis and fertility recommendation form.
15 "Soil analysis and fertility recommendation form" means a soil
16 analysis and fertility recommendation report consisting of one
17 or more pages.

18 1512.0020 APPLICATION FOR CERTIFICATION AND RENEWAL.

19 Participation by a laboratory in the Minnesota Soil Testing
20 Laboratory Certification Program is voluntary. Application for
21 initial and renewal certification must be on application forms
22 provided by the department. The enrollment period for
23 laboratories to submit an initial certification application and
24 fees is September 1 to November 30 of any year. The application
25 must include the:

26 A. name, address, and telephone number of the
27 laboratory;

28 B. names and signatures of laboratory supervisors;

29 C. names and signatures of fertilizer recommendation
30 supervisors, if different from those in item B;

31 D. types of analyses and analysis methods requested
32 for initial or renewal certification;

33 E. name of any land grant university whose fertilizer
34 recommendations will be provided on the laboratory's soil
35 analysis and fertility recommendation report forms; and

1 F. most current copy of soil analysis and fertility
2 recommendation report form used for Minnesota based clients.
3 This requirement does not apply for laboratories that are not
4 providing soil analysis and fertility recommendation services in
5 Minnesota as indicated on the initial or renewal certification
6 application.

7 1512.0025 TERM OF CERTIFICATION.

8 Laboratory certifications are valid from January 1 to
9 December 31 and must be renewed annually. The department shall
10 send renewal forms no later than 30 days before expiration of
11 certification.

12 1512.0030 FEES.

13 Fees for application and certification are stated in
14 Minnesota Statutes, section 18C.141. Applicable fees for
15 initial or renewal certification must be submitted with an
16 application. Fees may not be prorated. Land grant university
17 soil analysis laboratories in Minnesota and those that are in
18 states contiguous with Minnesota are exempt from all fees.

19 Laboratories that fail to pay the renewal fee by December
20 31 of each year, as designated by postmark, must have their
21 certifications classified as lapsed and are subject to initial
22 fee charges to regain certification status. A laboratory
23 certification must be reclassified as revoked if the initial or
24 renewal fees payable are not postmarked within 60 days after the
25 December 31 deadline.

26 1512.0035 MINIMUM STANDARDS FOR LABORATORY EQUIPMENT AND
27 FACILITIES.

28 Each laboratory that performs soil analysis must maintain
29 equipment and facilities that are adequate and appropriate for
30 the services offered. Each laboratory must maintain the
31 standards in items A and B.

32 A. Equipment must be maintained in proper working
33 order and routinely checked to assure accuracy. Instruments
34 must meet the specifications of the methodology for the analysis

1 being performed and must be maintained, monitored, and
2 calibrated to assure accuracy.

3 B. The laboratory must follow a written plan of
4 quality control assurance. The plan must describe policies and
5 procedures used to:

6 (1) track soil samples from time of receipt to
7 analysis;

8 (2) calibrate instruments, including frequency;

9 (3) maintain functional equipment, including
10 routine maintenance procedures and schedules; and

11 (4) check internal quality control.

12 1512.0040 MINIMUM PERSONNEL STANDARDS.

13 Each laboratory that performs soil analysis must be
14 supervised by persons who are responsible for the training and
15 supervision of the laboratory staff. The supervisor must meet
16 one of the following qualifications:

17 A. be a graduate of an accredited college with a
18 bachelor of science degree and a graduate in one of the
19 chemical, engineering, physical, or biological sciences; or

20 B. have five years prior experience in the
21 supervision or operations of a laboratory that performs soil
22 analysis.

23 1512.0045 RECORDS.

24 Records of sample receipt, sample analysis, soil fertility
25 recommendations, and internal quality assurance must be
26 maintained for at least one year.

27 1512.0050 APPROVED SOIL ANALYSIS METHODS AND PROCEDURES.

28 Soil analysis methods and procedures must be those
29 applicable to Minnesota soils and conditions that are set forth
30 in the most recent edition of the Recommended Chemical Soil Test
31 Procedures for the North Central Region, North Central Regional
32 Publication 221. This publication is incorporated by reference,
33 is not subject to frequent change, and is available from the
34 Minnesota State Law Library, the Minnesota Department of

1 Agriculture, Division of Agronomy Services, or the Soil Testing
2 Laboratory, University of Minnesota, St. Paul.

3 Alterations in procedures which maintain the integrity of
4 the analytical method are allowable if the check sample
5 analytical data is within the one standard deviation from the
6 mean range as denoted in part 1512.0065, subpart 6, and as
7 specified in the North Central Regional Publication 221.

8 1512.0055 SOIL ANALYSIS METHOD OR PROCEDURE VARIANCE.

9 The department may grant a variance from requirements of
10 part 1512.0050. To request a variance, a laboratory must
11 provide a written request to the department including:

12 A. the specific methods or procedures for which the
13 variance is being sought including analytical methodology;

14 B. reasons for the request; and

15 C. documentation and research to show correlation of
16 analytical data to crop response and interpretation of the soil
17 analysis to provide fertilizer recommendations for Minnesota
18 soils and conditions.

19 The department shall review information submitted with the
20 variance request in consultation with the soil testing advisory
21 panel according to part 1512.0075. The department shall grant
22 or deny the variance within 100 working days of receipt of the
23 request. Analytical methods or procedures that have been
24 granted a variance may be used by any laboratory requesting
25 initial or renewal certification. Analytical methods or
26 procedures that have been granted a variance must be published
27 in the yearly certification program report and provided by any
28 laboratory requesting certification. The department shall send
29 written reasons for a denial of a request for variance within
30 100 working days of receipt of request.

31 1512.0060 APPEAL OF ADMINISTRATIVE DECISION.

32 The department shall notify a laboratory in writing of the
33 reasons for a decision to deny a variance or to deny, suspend,
34 or revoke certification. The laboratory has 30 days from the
35 date of receiving notice of the decision to appeal the

1 decision. A request to appeal the decision must be in writing
2 to the department, must indicate the facts the laboratory
3 disputes, and must be signed by the laboratory supervisor. The
4 appeal may include a request for a personal meeting with the
5 department for purposes of discussing disputed facts and
6 findings. The department must consult with the advisory panel
7 regarding the appeal. The department shall accept or deny the
8 appeal and respond to the laboratory making the appeal within
9 100 working days of receipt of the request.

10 1512.0065 ANALYZING CHECK SAMPLES AND ANALYTICAL DATA FOR
11 GRANTING CERTIFICATION.

12 Subpart 1. Minimum laboratory analytical methods for
13 laboratory certification. Laboratories desiring certification
14 must analyze the check samples for the following parameters as a
15 minimum requirement: Bray or Olsen phosphorus, potassium,
16 nitrate-nitrogen, pH, and organic matter. Any remaining
17 analysis methods, as recognized by North Central Regional
18 Publication 221, are required only if soil fertility
19 recommendations are made. Each check sample must be handled and
20 analyzed in duplicate for all analysis methods and procedures
21 for which the laboratory is requesting initial or renewal
22 certification. Duplicate check samples must be analyzed on
23 different days and reported as individual results.

24 Subp. 2. Reporting units on check sample analysis report.
25 Analytical data of check samples must be reported in elemental
26 form as follows:

27 A. nitrate-nitrogen, phosphorus, potassium,
28 sulfate-sulfur, chloride, calcium, and magnesium to the nearest
29 part per million (ppm);

30 B. organic matter to the nearest tenth of a
31 percentage;

32 C. pH and buffer pH to the nearest tenth of a pH
33 unit;

34 D. all micronutrients reported to the nearest tenth
35 of a ppm; and

1 E. soluble salts reported to the nearest 0.1 mmhos/cm.

2 Subp. 3. **Check sample processing and handling.** Check
3 samples, other than blind check samples referred to in subpart
4 7, must be processed and prepared by the department or by a
5 person under contract with the department according to approved
6 soil analysis methods and procedures. Check samples must be
7 shipped in secure containers and be ready for analysis upon
8 receipt.

9 Subp. 4. **Initial certification check samples.** Upon
10 receipt of the application form and application and
11 certification fees, the department shall send eight check
12 samples for analysis. Check samples, accompanied by analysis
13 data forms and instructions, must be sent by the department to a
14 laboratory applying for initial certification between September
15 1 and December 31. The laboratory must submit analytical data
16 to the department within 30 days of receipt of the check
17 samples. Analytical data submitted after this deadline must be
18 considered invalid. The laboratory may not be reimbursed for
19 analysis costs incurred in obtaining initial certification.

20 Subp. 5. **Renewal certification check samples.**
21 Laboratories applying for renewal certification must analyze two
22 sets of four check samples on a semiannual basis. Check
23 samples, accompanied by analysis data forms and instructions,
24 must be sent by the department during the following time
25 periods: March 1 to May 1 and August 1 to October 1. The
26 laboratory must submit analytical data to the department within
27 30 days of receipt of the check samples. Analytical data
28 submitted after this deadline must be considered invalid. The
29 laboratory may not be reimbursed for analysis costs incurred in
30 obtaining renewal certification.

31 Subp. 6. **Statistical guidelines for granting**
32 **certification.** The department shall compile analytical data
33 submitted by laboratories for each set of check samples. Check
34 sample analytical data from qualifying laboratories must be
35 composited by the department to provide statistical means and
36 standard deviations for each soil testing method. Check sample

1 analytical data points outside the range of plus or minus one
2 standard deviation from the mean must be noted.

3 Statistical guidelines for determining initial and renewal
4 certification are:

5 A. Initial certification. If more than 20 percent of
6 a laboratory's individual check sample analytical data points
7 are outside the range of plus or minus one standard deviation
8 from the mean, the laboratory shall reanalyze check samples.
9 Initial certification must be denied if more than 20 percent of
10 a laboratory's check sample analytical data points are outside
11 the range of plus or minus one standard deviation from the mean.

12 B. Renewal certification. If more than 20 percent of
13 the analytical data points of each set of four check samples
14 falls outside the range of plus or minus one standard deviation
15 from the mean, the laboratory must reanalyze the check samples.
16 The percent of analytical data points outside the range of plus
17 or minus one standard deviation from the mean for both the
18 analyzed and reanalyzed check samples must then be noted. Once
19 both sets of semiannual check samples have been analyzed, the
20 composite analytical data points from both sets of check samples
21 must be combined to determine the percent that falls outside the
22 range of plus or minus one standard deviation from the mean.
23 Renewal certification must be denied if more than 20 percent of
24 the total annual composite analytical data points falls outside
25 the range of plus or minus one standard deviation from the mean.

26 Subp. 7. Blind soil check samples to certified and
27 uncertified laboratories. The department may conduct blind
28 check samples on either certified or uncertified laboratories as
29 stated in Minnesota Statutes, section 18C.141, subdivision 2,
30 paragraph (d). For purposes of this subpart, "blind check
31 sample" means a sample sent to a laboratory by the department
32 under an assumed name, and in a manner to make it appear that
33 the sample came from a client. Check sample preparation as
34 stated in subpart 3 may not be required so that the identity of
35 the sending party is not revealed. The department shall bear
36 the cost of requested analyses for blind check samples. If

1 analytical data falls outside the range of plus or minus one
2 standard deviation from the mean, the department shall consult
3 with the laboratory concerning the discrepancy or inaccuracy of
4 the blind check samples analytical data produced by the
5 laboratory.

6 1512.0070 REPORTING CHECK SAMPLE ANALYTICAL DATA, STATISTICS,
7 AND CERTIFIED LABORATORIES.

8 Subpart 1. Analytical data and statistical reporting. The
9 department shall compile reports of analytical data submitted by
10 laboratories and statistics for each set of check samples.
11 Laboratories must remain unidentified on the report. Each
12 laboratory participating in the certification program must
13 receive a copy of its own data and summary statistics.

14 Subp. 2. Report of certified laboratories. The department
15 shall compile a yearly report listing laboratories that meet the
16 certification requirements of the Minnesota Soil Testing
17 Laboratory Certification Program, and the analytical methods for
18 which each laboratory is certified. Annual reports must be
19 available April 1 of each year. Current lists of certified
20 laboratories will be available from the department.

21 1512.0075 ADVISORY PANEL.

22 The department shall appoint a soil testing advisory panel
23 to provide recommendations on appropriate soil analytical
24 methods and procedures for Minnesota climate and conditions, and
25 to provide technical evaluations of requests for analytical
26 variances. The advisory panel must include representation from
27 the Minnesota Department of Agriculture, the Agricultural
28 Extension Service, the University of Minnesota College of
29 Agriculture, the fertilizer industry, agricultural crop
30 consultants, and the soil testing laboratory industry. The
31 advisory panel shall meet at least once a year. Members shall
32 serve three year terms and have equal voting power. Panel
33 meetings must be open to the public.

34 1512.0080 LABORATORY INSPECTIONS.

1 The purpose of laboratory inspections is to investigate the
2 general cleanliness of the laboratory, examine equipment used in
3 soil analysis methods and procedures, and review qualifications
4 of personnel. Inspections of laboratories must be conducted
5 during normal business hours by the department to determine
6 compliance with certification requirements. Inspections may be
7 unannounced and done on a random basis.

8 1512.0085 SOIL ANALYSIS AND SOIL FERTILITY RECOMMENDATION
9 REPORTING.

10 A. Analytical data of client soil samples must be
11 reported in elemental form as follows:

12 (1) phosphorus (P), potassium (K), calcium, and
13 magnesium to the nearest part per million (ppm);

14 (2) nitrate-nitrogen, sulfate-sulfur, and
15 chloride in pounds per acre or parts per million for the
16 appropriate sampling depth;

17 (3) organic matter to the nearest tenth of a
18 percentage;

19 (4) pH and buffer pH to the nearest tenth of a pH
20 unit;

21 (5) all micronutrients reported to the nearest
22 tenth of a ppm; and

23 (6) soluble salts reported to the nearest 0.1
24 mmhos/cm.

25 B. If a certified laboratory provides soil fertility
26 recommendations, the University of Minnesota soil fertility
27 recommendations or that of another land grant university in a
28 contiguous state must be provided in addition to other
29 recommendations, and the source of the recommendations must be
30 identified on the soil analysis and soil fertility
31 recommendation report form. Land grant university soil
32 fertility recommendations must be on the same soil analysis and
33 soil fertility recommendation report form with other soil
34 fertility recommendations as stated by the certified
35 laboratory. If the soil analysis and soil fertility

1 recommendation report form consists of more than one page, the
2 first page of the report form must conspicuously state that
3 "Land-Grant University of Minnesota Soil Fertility
4 Recommendations or That of a Land Grant University in a
5 Contiguous State Have Been Provided With This Report." A
6 certified laboratory shall not provide soil fertility
7 recommendations if a request from a client is made that only
8 soil analysis information be provided on the soil analysis and
9 soil fertility recommendation report form.

10 C. Certified laboratories that provide land grant
11 university soil fertility recommendations must provide these
12 recommendations from only one land grant university to the
13 greatest extent possible. Land grant university soil fertility
14 recommendations must conform to all conditions, requirements,
15 and guidelines established for that state. Soil fertility
16 recommendations of a land grant university from a state
17 contiguous with Minnesota may be substituted if University of
18 Minnesota soil fertility recommendations do not exist or if the
19 selected soil fertility recommendations are more appropriate
20 based on soil or climatic conditions. The origin of land grant
21 university soil fertility recommendations from a state
22 contiguous with Minnesota must be conspicuously stated on the
23 soil analysis and soil fertility recommendation report form. If
24 the certified laboratory makes a soil fertility recommendation
25 in which no University of Minnesota or other suitable land grant
26 university soil fertility recommendation from a contiguous state
27 exist, the laboratory must state on the soil analysis and soil
28 fertility recommendation report form that no land grant
29 university soil fertility recommendations are available.
30 Certified laboratories must update land grant university soil
31 fertility recommendations on an annual basis.

32 D. Certified laboratories must be certified for any
33 analytical method used to analyze soil for which a soil
34 fertility recommendation is made. If a certified laboratory is
35 not certified for a particular analytical method, this must be
36 noted on the soil analysis and soil fertility recommendation

1 report form. If more than one approved analytical method exists
2 in the North Central Regional Publication 221, the analytical
3 method used must be identified along with the soil fertility
4 recommendation.

5 E. If soil analysis and soil fertility recommendation
6 report forms are transferred and provided through computer,
7 computer program, electronic, mail, or telephone networks from a
8 certified laboratory, all requirements of parts 1512.0010 to
9 1512.0085 must be met. A printed copy of a soil analysis and
10 soil fertility recommendation report form must be provided to
11 the client of the certified laboratory.