

2026 SMSU AgBowl Soils Scorecard Questions for Pits 1-3: Scantron # 105481

Use your soils scorecard to fill out the answers on your scantron

**Bubble in Written Exam A for Pit 1 (#1-45) and Pit 2 (#51-95) and Bubble in
Written Exam B on the sheet for Pit 3 (#1-45)**

Pits 1 & 3 Questions

Part 1: Surface soil

1. Surface Soil: Thickness in inches (2 pts)

- A. 8-10 Inches
- B. 12--14 Inches
- C. 16-18 Inches
- D. 20-22 Inches

2. Surface Soil Color (4 pts)

- A. Dark
- B. Medium
- C. Light

3. Surface: Soil Texture (5 pts)

- A. Coarse
- B. Moderately Coarse
- C. Medium
- D. Fine
- E. Very Fine

4. Surface: Gravel and Rock (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 2: Subsurface Soil

5. Subsurface Soil: Thickness in inches (2 pts)

- A. 12-14 Inches
- B. 17-20 Inches
- C. 26-28 Inches
- D. 34-36 Inches

6. Subsurface: Soil Color (4 pts)

- A. Bright
- B. Mottled
- C. Dull

7. Subsurface: Texture (5 pts)

- A. Coarse
- B. Moderately coarse
- C. Medium
- D. Fine
- E. Very Fine

8. Subsurface: Gravel and Rock (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 3: Underlying Material

9. Parent Material: Thickness in inches (2pts)

- A. 10-14 Inches
- B. 16-88 Inches
- C. 20-22 Inches
- D. 24-26 Inches

10. Underlying Material: Texture (5 pts)

- A. Coarse
- B. Moderately coarse
- C. Medium
- D. Fine
- E. Very Fine

11. Underlying Material: Gravel (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 4: Topography

12. Steepness of slope (3 pts)

- A. Nearly level – 2% or less
- B. Gently sloping - 3 – 6 %
- C. Moderately sloping - 7 – 12 %
- D. Strongly sloping - 13 - 18 %
- E. Steep – Greater than 18 %

13. Landscape position (3 pts)

- A. Upland
- B. Terrace – Footslope
- C. Bottom land – Flood Plains
- D. Depressional Area – No outlet

Part 5: Land Classification

14. Land Capability Classification (6 pts)

- A. Class I or II
- B. Class III
- C. Class IV
- D. Class V
- E. Class VI, VII, or VIII

Part 6: Interpretation of Soils Features

15. Type of Material that Limits Depth (2 pts)

- A. None- No limiting materials
- B. Bedrock – Soft or hard
- C. Hardpan – Cemented
- D. Very gravelly sand or high water table

16. Parent Material (2 pts)

- A. Bedrock – Soft or hard
- B. Alluvium/ Outwash/ Lacustrine
- C. Till/ Loess/ Aeolian Sand
- D. Organic Materials – Peat or Muck

17. Depth favorable for roots & water (2 pts)

- A. Very deep- 60 inches or more
- B. Deep- 40 – 59 inches
- C. Moderately Deep- 20 – 39 inches
- D. Shallow- less than 20 inches

18. Air and water movement (2 pts)

- A. Very Rapid
- B. Rapid
- C. Moderate
- D. Slow

E. Total Available Water Capacity

Available water in horizon/ inch of soil

19. a. Surface Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

20. b. Subsoil Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

21. c. Underlying material Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

Available Water Capacity per Horizon

22. a. Surface Horizon (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

23. b. Subsoil Horizon (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

24. c. Underlying material (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

25. 3. Total available water capacity in 5 ft of soil (4 pts.)

- A. Very low – less than 3 inches
- B. Low – 3.1 to 6 inches
- C. Moderate – 6.1 to 9 inches
- D. High – Over 9 inches

26. 4. Internal drainage (4 pts.)

- A. Well drained
- B. Moderately well drained
- C. Somewhat poorly drained
- D. Poorly or very poorly drained

Part 7 – Accelerated erosion

27. Amount of erosion (2 pt.)

- A. No erosion evident (less than 2 inches)
- B. Deposition (2 inches or greater)
- C. Erosion present (2 inches or greater)

28. Kind of erosion (2 pts.)

- A. None
- B. Active gully
- C. Wind erosion
- D. Sheet or rill

Part 8 – Need for erosion control

29. Water erosion (3 pts.)

- A. None to slight
- B. Crop cover, sod cover and conservation tillage
- C. Contour, strip crop and conservation tillage
- D. Grass waterways and gully control
- E. Woodland/perm. pasture, wildlife or recreation

30. Wind erosion (3 pts.)

- A. None to slight
- B. Mulch tillage, cover crop

Part 9

31. Drainage required (5 pts.)

- A. None required
- B. Surface and/or tile

Part 10 – Fertilizer and lime recommendations

32. Nitrogen pounds per acre (2 pts)

- A. 161+
- B. 121 - 160
- C. 81 - 120
- D. 41 - 80
- E. 0 - 40

33. Phosphorous pounds per acre (2 pts.)

- A. 81+
- B. 61 - 80
- C. 41 - 60
- D. 21 - 40
- E. 0 - 20

34. Potassium pounds per acre (2 pts.)

- A. 181+
- B. 136 - 180
- C. 96 - 135
- D. 46 - 90
- E. 0 - 45

35. Lime tons per acre (2 pts.)

- A. 8.5+
- B. 6.5 - 8.0
- C. 4.6 - 6.0
- D. 2.5 - 4.5
- E. 0.0 - 2.0

Part 11 – Land Use limitation

36. Dwellings (lawns), foundations, basements (3 pts)

- A. Slight
- B. Moderate
- C. Severe

Use limitation

37 Septic tank absorption fields (3 pts.)

- A. Slight
- B. Moderate
- C. Severe

Use limitation

38. Farm lagoons and holding basins (3 pts.)

- A. Slight
- B. Moderate
- C. Severe

39. % Slope (3 pts.)

- A. Zero to 2.0
- B. 2.1 to 6.0
- C. 6.1 to 12.0
- D. More than 12.0

40. Surface Soil Texture (1 pt.)

- A. Medium, moderate, coarse
- B. Coarse, fine, very fine

41. Flooding (3 pts.)

- A. None
- B. Any flooding

42. Internal Drainage Class (3 pts.)

- A. Well drained, moderate well drained
- B. Somewhat poorly drained
- C. Poorly drained

43. Permeability Class (2 pts)

- A. Vary rapid to rapid
- B. Moderate
- C. Slow to Very slow

44. Depth to Bedrock (Inches) (3 pts)

- A. More than 60
- B. 40 to 60
- C. Less than 40

45. Underlying Material (Shrink swell) (1pt)

- A. Coarse, mod. coarse, medium texture
- B. Fine texture
- C. Very fine texture

Minnesota Soils Scorecard Questions for Pits 1 - 3 Scantron # 105481

Use your soils scorecard to fill out the answers on your scantron

Bubble in Written Exam A for Pit 1 (#1-45) and Pit 2 (#51-95) and

Bubble in Written Exam B on the sheet for Pit 3 (#1-45)

Pits 2 & 4 Questions

Part 1: Surface soil

51. Surface Soil: Thickness in inches (2 pts)

- A. 3-5 Inches
- B. 9-11 Inches
- C. 13-15 Inches
- D. 20-22 Inches

52. Surface Soil Color (4 pts)

- A. Dark
- B. Medium
- C. Light

53. Surface: Soil Texture (5 pts)

- A. Coarse
- B. Moderately Coarse
- C. Medium
- D. Fine
- E. Very Fine

54. Surface: Gravel and Rock (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 2: Subsurface Soil

55. Subsurface Soil: Thickness in inches (2 pts)

- A. 14-16 Inches
- B. 20-22 Inches
- C. 25-27 Inches
- D. 30-32 Inches

56. Subsurface: Soil Color (4 pts)

- A. Bright
- B. Mottled
- C. Dull

57. Subsurface: Texture (5 pts)

- A. Coarse
- B. Moderately coarse
- C. Medium
- D. Fine
- E. Very Fine

58. Subsurface: Gravel and Rock (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 3: Underlying Material

59. Parent Material: Thickness in inches (2pts)

- A. 18-20 Inches
- B. 23-25 Inches
- C. 29-31 Inches
- D. 33-35 Inches

60. Underlying Material: Texture (5 pts)

- A. Coarse
- B. Moderately coarse
- C. Medium
- D. Fine
- E. Very Fine

61. Underlying Material: Gravel (2 pts)

- A. None to Few
- B. Gravelly
- C. Very Gravelly
- D. Extremely Gravelly

Part 4: Topography

62. Steepness of slope (3 pts)

- A. Nearly level – 2% or less
- B. Gently sloping – 3 – 6 %
- C. Moderately sloping - 7 – 12 %
- D. Strongly sloping - 13 - 18 %
- E. Steep – Greater than 18 %

63. Landscape position (3 pts)

- A. Upland
- B. Terrace – Footslope
- C. Bottom land – Flood Plains
- D. Depressional Area – No outlet

Part 5: Land Classification

64. Land Capability Classification (6 pts)

- A. Class I or II
- B. Class III
- C. Class IV
- D. Class V
- E. Class VI, VII, or VIII

Part 6: Interpretation of Soils Features

65. Type of Material that Limits Depth (2 pts)

- A. None- No limiting materials
- B. Bedrock – Soft or hard
- C. Hardpan – Cemented
- D. Very gravelly sand or high water table

66. Parent Material (2 pts)

- A. Bedrock – Soft or hard
- B. Alluvium/ Outwash/ Lacustrine
- C. Till/ Loess/ Aeolian Sand
- D. Organic Materials – Peat or Muck

67. Depth favorable for roots & water (2 pts)

- A. Very deep- 60 inches or more
- B. Deep- 40 – 59 inches
- C. Moderately Deep- 20 – 39 inches
- D. Shallow- less than 20 inches

68. Air and water movement (2 pts)

- A. Very Rapid
- B. Rapid
- C. Moderate
- D. Slow

E. Total Available Water Capacity

Available water in horizon/ inch of soil

69. a. Surface Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

70. b. Subsoil Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

71. c. Underlying material Horizon (1 pt)

- A. 0.05
- B. 0.15
- C. 0.20

Available Water Capacity per Horizon

72. a. Surface Horizon (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

73. b. Subsoil Horizon (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

74. c. Underlying material (1 pt)

- A. 0.0 - 2.0
- B. 2.1 – 4.0
- C. 4.1 – 6.0
- D. 6.1 – 8.0
- E. 8.1+

75. 3. Total available water capacity
(5 ft. of soil) (4 pts.)

- A. Very low – less than 3 inches
- B. Low – 3.1 to 6 inches
- C. Moderate – 6.1 to 9 inches
- D. High – Over 9 inches

76. 4. Internal drainage (4 pts.)

- A. Well drained
- B. Moderately well drained
- C. Somewhat poorly drained
- D. Poorly or very poorly drained

Part 7 – Accelerated erosion

77. Amount of erosion (2 pt.)

- A. No erosion evident (less than 2 inches)
- B. Deposition (2 inches or greater)
- C. Erosion present (2 inches or greater)

78. Kind of erosion (2 pts.)

- A. None
- B. Active gully
- C. Wind erosion
- D. Sheet or rill

Part 8 – Need for erosion control

79. Water erosion (3 pts.)

- A. None to slight
- B. Crop cover, sod cover and conservation tillage
- C. Contour, strip crop and conservation tillage
- D. Grass waterways and gully control
- E. Woodland/perm. pasture, wildlife or recreation

80. Wind erosion (3 pts.)

- A. None to slight
- B. Mulch tillage, cover crop

Part 9

81. Drainage required (5 pts.)

- A. None required
- B. Surface and/or tile

Part 10 – Fertilizer and lime recommendations

82. Nitrogen pounds per acre (2 pts)

- A. 161+
- B. 121 - 160
- C. 81 - 120
- D. 41 - 80
- E. 0 - 40

83. Phosphorous pounds per acre (2 pts.)

- A. 81+
- B. 61 - 80
- C. 41 - 60
- D. 21 - 40
- E. 0 - 20

84. Potassium pounds per acre (2 pts.)

- A. 181+
- B. 136 - 180
- C. 96 - 135
- D. 46 - 90
- E. 0 - 45

85. Lime tons per acre (2 pts.)

- A. 8.5+
- B. 6.5 - 8.0
- C. 4.6 - 6.0
- D. 2.5 - 4.5
- E. 0.0 - 2.0

Part 11 – Land Use limitation

86. Dwellings (lawns), foundations, basements

(3 pts)

- A. Slight
- B. Moderate
- C. Severe

Use limitation

87 Septic tank absorption fields (3 pts.)

- A. Slight
- B. Moderate
- C. Severe

Use limitation

88. Farm lagoons and holding basins (3 pts.)

- A. Slight
- B. Moderate
- C. Severe

89. % Slope (3 pts.)

- A. Zero to 2.0
- B. 2.1 to 6.0
- C. 6.1 to 12.0
- D. More than 12.0

90. Surface Soil Texture (1 pt.)

- A. Medium, moderate, coarse
- B. Coarse, fine, very fine

91. Flooding (3 pts.)

- A. None
- B. Any flooding

92. Internal Drainage Class (3 pts.)

- A. Well drained, moderate well drained
- B. Somewhat poorly drained
- C. Poorly drained

93. Permeability Class (2 pts)

- A. Vary rapid to rapid
- B. Moderate
- C. Slow to Very slow

94. Depth to Bedrock (Inches) (3 pts)

- A. More than 60
- B. 40 to 60
- C. Less than 40

95. Underlying Material (Shrink swell) (1pt)

- A. Coarse, mod. coarse, medium texture
- B. Fine texture
- C. Very fine texture