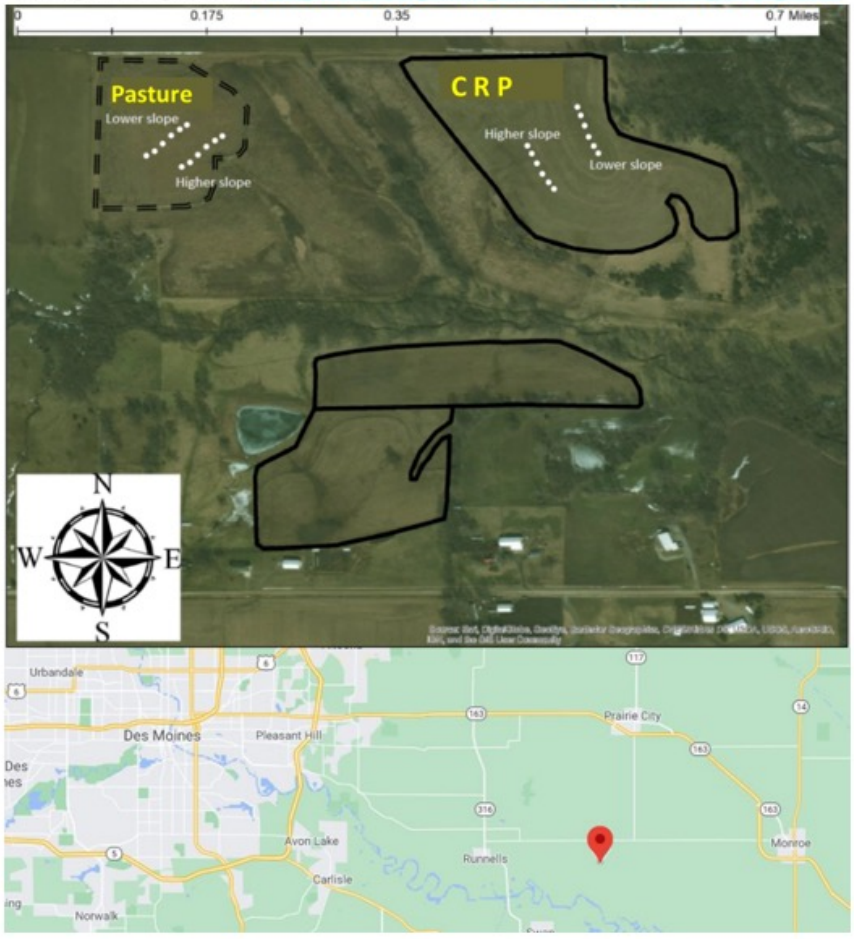
SOIL HEALTH REPORT



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USDA Agricultural Research Service

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Soil Health Summary

SQI values range from 0 to 1, with higher values considered better for crop growth.

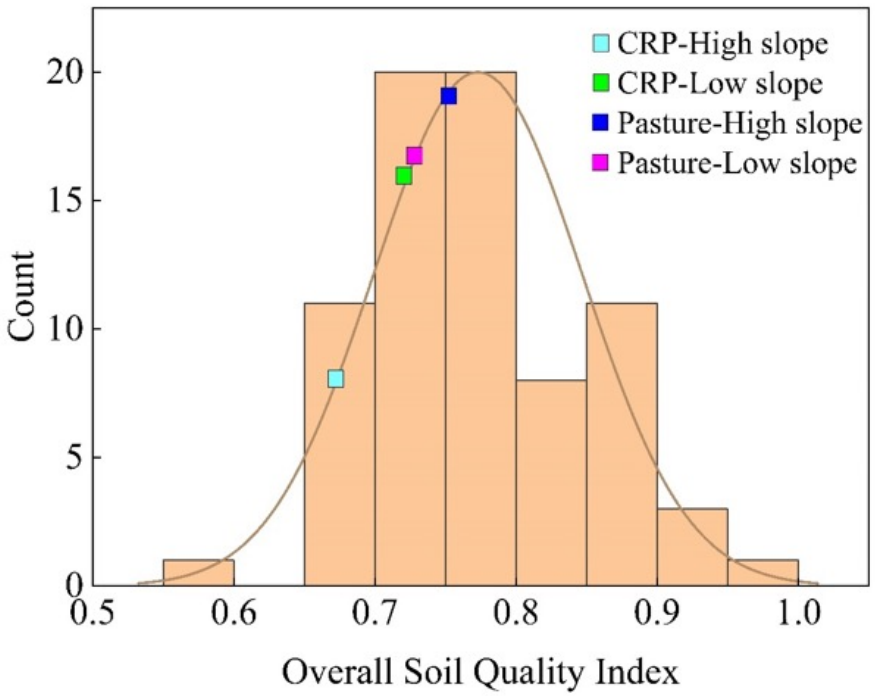

Figure 3. Distribution of the overall Soil Quality Index (SQI) at 0 to 6-inch soil depth. Bars represent the overall SQI of the 38 selected fields. Squares represent the overall SQI of FDC007.

Soil Health Summary

Table 3. Overall Soil Quality Index and individual soil health scores for 0 to 6-inch soil depth.

Soil analyses	———CRP———		——Pasture——		Conservation Effects (%)[1]	
	High slope	Low slope	High slope	Low slope	High slope	Low slope
Overall Soil Quality Index	0.68	0.73	0.76	0.74	-9	-0.4
Physical Soil Quality Index	0.70	0.71	0.39	0.44	82	61
Chemical Soil Quality Index	1.00	0.97	0.97	1.00	3	-3
Biological Soil Quality Index	0.25	0.30	0.15	0.21	69	44
Nutrient Soil Quality Index	0.49	0.64	0.98	0.83	-50	-23
Bulk density score	0.70	0.71	0.39	0.44	82	61
Aggregate stability score						
Soil pH score	1.00	0.95	0.95	1.00	5	-5
Electrical conductivity score	1.00	1.00	1.00	1.00	0	0
Soil organic carbon score	0.42	0.48	0.24	0.33	77	45
Phosphorus score	0.10	0.36	1.00	0.70	-90	-48
Potassium score	0.89	0.92	0.96	0.96	-8	-5

[1]A positive number (green) shows that the conservation effect increased soil nutrient values, a negative number (red) shows that the conservation effect decreased soil nutrient values, and no conservation effect is shown in yellow.

Soil-Test Summary

Table 2. Soil-test values for 0 to 6-inch soil depth.[1]

Soil-Test Analyses	CRP		Pasture		Conservation Effects (%)[2]	
	High slope	Low slope	High slope	Low slope	High slope	Low slope
Soil organic matter (tons/ac)	23.48	25.28	24.40	23.71	-4	7
Soil organic carbon (tons/ac)	13.08	13.99	11.42	13.02	15	7
Soil total nitrogen (tons/ac)	1.40	1.53	1.11	1.40	25	9
Bulk density (g/cm^3)	1.18	1.18	1.35	1.31	-12	-10
Soil pH	6.4	6.2	6.2	6.4	4	-4
Electrical conductivity (dS/m)	0.31	0.34	0.32	0.28	-2	23
Sodium (ppm)	15	14	14	11	7	24
Cation exchange capacity	22.4	23.8	23.7	20.8	-6	15
Nitrate-nitrogen (ppm)	5	7	3	3	100	122
Phosphorus (ppm)	5	8	21	13	-77	-37
Potassium (ppm)	132	143	170	169	-23	-15
Magnesium (ppm)	645	702	684	530	-6	33
Calcium (ppm)	2824	2851	2817	2635	0	8
Sulfur (ppm)	7	10	7	5	0	100
Zinc (ppm)	0.5	0.6	0.8	1.2	-38	-50
Manganese (ppm)	15.2	21.9	22.1	16.6	-31	32
Copper (ppm)	1.6	1.6	3.5	3.3	-54	-51
Iron (ppm)	34.9	36.1	44.1	36.6	-21	-1
Boron (ppm)	0.3	0.3	0.3	0.3	0	11

[1]*See Table S1 for deep core soil-test data.*

[2]*A positive number (green) shows that the conservation effect increased soil nutrient values, a negative number (red) shows that the conservation effect decreased soil nutrient values, and no conservation effect is shown in yellow.*

Soil Biology Summary

Soil carbon and nitrogen cycles are driven by microbes. The biological indicators suggest soil microbial activities in various aspects.

Table 6. Soil biological indicators for 0 to 6-inch soil depth.

Soil analyses	———CRP———		——Pasture——		Conservation Effects (%)[1]	
	High slope	Low slope	High slope	Low slope	High slope	Low slope
Soil labile organic carbon (mg/kg)	547	569	402	446	36	27
Mineralizable soil carbon (mg/kg)	92	109	85	56	7	95
Soil enzyme activity (mg/kg/hr)	83	103	64	82	30	26
Extractable soil protein (g/kg)						

[1]A positive number (green) shows that the conservation effect increased soil nutrient values, a negative number (red) shows that the conservation effect decreased soil nutrient values, and no conservation effect is shown in yellow.

Soil Erosion Risk Summary

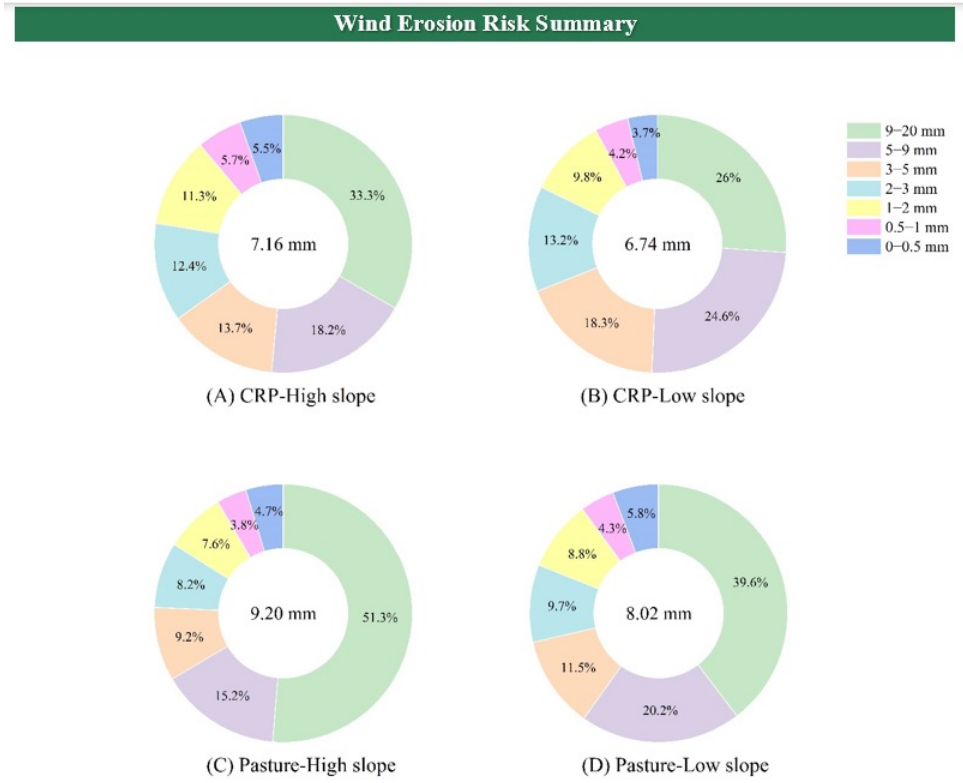

Figure 4. Dry aggregate size distribution for 0 to 6-inch soil depth. Numbers in the center of circle represent mean weight diameters, with larger values considered more resistant to wind erosion.