

Comparison of Soil Classification Systems

Farmland Classification

Land Capability Classification

Crop Productivity Index (CPI)

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Farmland Classification System

Definitions

- Prime Farmland: best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Not excessively eroded, not frequently flooded, not urban land, drained if needed.
- Farmland of Statewide Importance: those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

Land Capability Classification System

- the suitability of soils for most kinds of field crops
- soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management
- Capability classes are designated by the numbers 1 through 8, the numbers indicate progressively greater limitations; subclasses characterize the kind of limitations (s = droughty, w = wetness, e = erosion). 1-few limits, 2-moderate limits, 3-severe limits, 4- very severe limits, 5 to 8 not usually cropland.

CPI Definition

- The Minnesota Crop Productivity Index (CPI) ratings provide a relative ranking of soils based on their potential for intensive row crop production.
- Ratings range from 0 to 100. The higher numbers indicate higher production potential.
- based on physical and chemical properties of the soils and on such hazards as flooding or ponding

MuSym	Winona County Mapunit Name	CPI	Farmland Classification	Land Capability Classification
477	Littleton silt loam	100	Prime	1
301A	Lindstrom silt loam, 1 to 3 percent slopes	99	Prime	1
285A	Port Byron silt loam, 1 to 3 percent slopes	99	Prime	1
455A	Festina silt loam, 0 to 2 percent slopes	98	Prime	1
285B	Port Byron silt loam, 3 to 6 percent slopes	98	Prime	2e
194	Huntsville silt loam	95	Prime	1
24	Kasson silt loam	95	Prime	2e
301C	Lindstrom silt loam, 6 to 12 percent slopes	92	Prime	3e
19	Chaseburg silt loam	92	Prime	1
99B	Racine silt loam, 2 to 6 percent slopes	91	Prime	2e
369B	Waubeeek silt loam, 2 to 6 percent slopes	91	Prime	2e
285C	Port Byron silt loam, 6 to 12 percent slopes	91	StateWide	3e
1830	Eitzen silt loam	91	Prime	2w
455B	Festina silt loam, 2 to 6 percent slopes	90	Prime	2e
401B	Mt. Carroll silt loam, 3 to 6 percent slopes	90	Prime	2e
103A	Seaton silt loam, 1 to 3 percent slopes	90	Prime	1
493B	Oronoco fine sandy loam, 3 to 8 percent slopes	88	Prime	2e
215B	Southridge silt loams, 2 to 6 percent slopes	88	Prime	2e
580B	Blackhammer-Southridge silt loams, 2 to 6 percent slopes	87	Prime	2e
262B	Medary silt loam, 1 to 6 percent slopes	87	Prime	2e
331	Tripoli silty clay loam	87	Prime	2w
492B	Nasset silt loam, 3 to 6 percent slopes	86	Prime	2e
176	Garwin silt loam	86	Prime	2w
587B	Palsgrove silt loam, 2 to 6 percent slopes	85	Prime	2e
1952B	Keltner silt loam, 3 to 6 percent slopes	85	Prime	2e
103B	Seaton silt loam, 3 to 6 percent slopes	85	Prime	2e
401C	Mt. Carroll silt loam, 6 to 12 percent slopes	80	StateWide	3e
369C	Waubeeek silt loam, 6 to 12 percent slopes	80	StateWide	3e

Comparing CPI 100 to 80 Winona Co.

- Most map units are Prime (89%)
- 3 map units are Statewide (11%)
- All map units that are capability class 1 are in CPI range of 90 to 100
- CPI 100 to 80 have capability class: 1 – 25%, 2e – 50%, 2w – 11%, 3e – 14%;

576	Newalbin silt loam	79	Prime	2w
468	Otter silt loam	79	Prime	2w
322C2	Timula silt loam, 6 to 12 percent slopes, eroded	78	StateWide	3e
215C	Southridge silt loam, 6 to 12 percent slopes	78	StateWide	3e
492C	Nasset silt loam, 6 to 12 percent slopes	77	StateWide	3e
1937	Lawler loam, bedrock substratum	77	Prime	2s
99C	Racine silt loam, 6 to 12 percent slopes	76	StateWide	3e
301D	Lindstrom silt loam, 12 to 20 percent slopes	73	Other	4e
587C	Palsgrove silt loam, 6 to 12 percent slopes	71	StateWide	3e
388C	Seaton silt loam, valleys, 6 to 12 percent slopes	71	StateWide	3e
103C	Seaton silt loam, 6 to 12 percent slopes	71	StateWide	3e
25	Becker fine sandy loam	71	Prime	2s
580C	Blackhammer-Southridge silt loams, 6 to 12 percent slopes	70	StateWide	3e
1952C	Keltner silt loam, 6 to 12 percent slopes	70	StateWide	3e
1955A	Waukee loam, bedrock substratum, 0 to 2 percent slopes	69	Prime	2s
483	Waukee loam	69	Prime	2s
826B	Gale-Blackhammer silt loams, 2 to 6 percent slopes	68	Prime	2e
1893B	Beavercreek variant loam, 1 to 6 percent slopes	68	StateWide	3e
586C	Nodine-Rollingstone silt loams, 4 to 12 percent slopes	67	StateWide	3e
401D	Mt. Carroll silt loam, 12 to 20 percent slopes	67	Other	4e
198C	Rollingstone silt loam, 3 to 12 percent slopes	67	StateWide	3e
1955B	Waukee loam, bedrock substratum, 2 to 6 percent slopes	66	Prime	2e
829C	Seaton-Gale silt loams, 6 to 12 percent slopes	65	StateWide	3e
1951A	Flagler sandy loam, bedrock substratum, 0 to 2 percent slopes	65	StateWide	3s
322D2	Timula silt loam, 12 to 20 percent slopes, eroded	64	Other	4e
587D	Palsgrove silt loam, 12 to 20 percent slopes	62	Other	4e
388D	Seaton silt loam, valleys, 12 to 20 percent slopes	62	Other	4e
103D	Seaton silt loam, 12 to 20 percent slopes	62	Other	4e
1953	Marshan silt loam, loamy substratum	62	Prime	2w
501B	NewGlarus silt loam, 3 to 6 percent slopes	61	Prime	2e
79B	Billett fine sandy loam, 1 to 6 percent slopes	60	Prime	3s

Comparing CPI 79 to 60 Winona Co.

- Farmland Classification: Prime – 35%, Statewide – 45%, other – 20%
- Land Capability Classification: 2e – 10%, 2w – 10%, 2s – 13%, 3e – 42%, 3s – 6%, 4e – 19%
- Prime are mostly 2(e,w,s) Capability;. All Prime are nearly level or gently sloping. (Prime 3s at 60 CPI is nearly level to gently sloping)
- Statewide are mostly 3e and sloping.
- Other 4e and moderately steep

484D	Eyota fine sandy loam, 12 to 20 percent slopes	59	Other	4e
826C	Gale-Blackhammer silt loams, 6 to 12 percent slopes	58	StateWide	3e
476B	Frankville silt loam, 2 to 6 percent slopes	58	Prime	2e
215D	Southridge silt loam, 12 to 20 percent slopes	58	Other	4e
580D	Blackhammer-Southridge silt loams, 12 to 20 percent slopes	55	Other	4e
476C	Frankville silt loam, 6 to 12 percent slopes	55	StateWide	3e
501C	NewGlarus silt loam, 6 to 12 percent slopes	54	StateWide	3e
198D	Rollingstone silt loam, 12 to 20 percent slopes	54	Other	4e
299B	Rockton silt loam, 1 to 6 percent slopes	53	StateWide	3e
1951B	Flagler sandy loam, bedrock substratum. 2 to 6 percent slopes	53	StateWide	3e
586D	Nodine-Rollingstone silt loams, 12 to 20 percent slopes	52	Other	4e
1936	Hoopeston sandy loam, bedrock substratum	52	Prime	2s
174D	Gale silt loam, 12 to 20 percent slopes	47	Other	4e
501D	NewGlarus silt loam, 12 to 20 percent slopes	45	Other	4e
1954B	Spinks loamy fine sand, bedrock substratum, 1 to 6 percent slopes	45	StateWide	3e

Comparing CPI 59 to 45 Winona Co.

- 47% Other, 40% Statewide, 13% Prime.
- Prime are nearly level or gently slope, but have low to moderate AWC.
- Statewide: all 3e and either have bedrock at 20 to 40" and sloping or are sandier with low AWC and gently sloping.
- Other: all 4e and moderately steep

1822B	Abscota variant sand, 1 to 6 percent slopes	44	Other	3s
476D	Frankville silt loam, 12 to 18 percent slopes	43	Other	6e
1954C	Spinks loamy fine sand, bedrock substratum, 6 to 15 percent slopes	39	Other	6e
1960B	Haverhill variant, clay loam, 1 to 8 percent slopes	38	Other	4w
283B	Plainfield sand, 1 to 6 percent slopes	32	Other	4s
830D	Eleva-Seaton complex, 12 to 30 percent slopes	30	Other	6s/6e
388E	Seaton silt loam, valleys, 20 to 30 percent slopes	30	Other	6e
283C	Plainfield sand, 6 to 12 percent slopes	30	Other	6s
283D	Plainfield sand, 12 to 25 percent slopes	27	Other	7s
95C	Dunbarton silt loam, rocky, 4 to 12 percent slopes	23	Other	4e
81B	Boone loamy fine sand, 2 to 6 percent slopes	22	Other	4s
81C	Boone loamy fine sand, 6 to 15 percent slopes	21	Other	6s
11B	Sogn silt loam, 1 to 6 percent slopes	21	Other	7s
598B	Beavercreek silt loam, 1 to 8 percent slopes, stony	20	Other	6s
1861	Chaseburg silt loam, channeled	20	Other	5w
1860	Comfrey silt loam, channeled	20	Other	6w
1857	Eitzen silt loam, channeled	20	Other	5w
604	Huntsville-Beavercreek complex, channeled	20	Other	2w/5w
577	Newalbin silt loam, channeled	20	Other	5w
271	Minneiska fine sandy loam, channeled	20	Other	5w
522	Boots muck	15	Other	8w
322E2	Timula silt loam, 20 to 40 percent slopes, eroded	14	Other	7e
599E	Norden silt loam, 15 to 30 percent slopes	13	Other	6e
592E	Lamoille-Elbaville silt loams, 20 to 30 percent slopes	13	Other	6e/7e
173F	Frontenac loam, 30 to 40 percent slopes	11	Other	7e
501E	NewGlarus silt loam, rocky, 12 to 30 percent slopes	6	Other	6e
11D	Sogn silt loam, rocky, 6 to 30 percent slopes	6	Other	7s
815F	Elbaville-Seaton silt loams, 30 to 45 percent slopes	5	Other	7e
474B	Haverhill mucky silty clay loam, 1 to 8 percent slopes	5	Other	5w
322F	Timula silt loam, 40 to 60 percent slopes	5	Other	7e
1990	Otter mucky silt loam, very wet	5	Other	7w
1002	Fluvaquents, channeled	5	Other	8w
606	Shiloh silt loam, ponded	5	Other	8w
578	Newalbin silt loam, very wet	5	Other	7w
599F	Norden silt loam, 30 to 45 percent slopes	4	Other	7e
584F	Lamoille-Dorerton silt loams, 30 to 45 percent slopes	4	Other	7e
832F	Lacrescent-Rock outcrop complex, 30 to 45 percent slopes	3	Other	7e
457E	Lacrescent channery silt loam, 20 to 45 percent slopes	3	Other	6e
898F	Bellechester-Brodale complex, rocky, 15 to 60 percent slopes	3	Other	7s
488G	Brodale cobbly loam, rocky, 45 to 70 percent slopes	2	Other	7s
283F	Plainfield sand, 25 to 50 percent slopes	2	Other	7s
832G	Lacrescent-Rock outcrop complex, 45 to 70 percent slopes	1	Other	7e
831F	Spinks-Boone-Sogn complex, rocky, 15 to 60 percent slopes	1	Other	7e/7s/7s
457G	Lacrescent silt loam, rocky, 45 to 70 percent slopes	1	Other	7e
W	Water	0	Other	...
M-W	Water, miscellaneous	0	Other	...
1029	Pits, gravel	0	Other	...
1016	Udorthents, loamy	0	Other	...
1015	Psamments, fill	0	Other	...
1013	Pits, quarries	0	Other	...
1010	Riverwash	0	Other	...
840	Urban land-Finchford complex	0	Other	.../4s
839	Urban land-Minneopa complex	0	Other	.../3s

Comparing CPI 44 to 0 Winona Co.

- Farmland Classification: all Other.
- Below CPI of 22 capability class is 5 to 8.

conclusion

- The most productive soils are usually Prime Farmland.
- Prime Farmland has the least risk of being damaged under intensive crop production.
- Prime Farmland is not directly related to highest yielding; there are Statewide and Other farmland that are higher yielding than some Prime farmland
- Mid range productivity can be a mix of Statewide, Prime, and Other.
- Lower range productivity are all Other.