Status of P and K in Wisconsin Soils

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2001 Potash and Phosphate Institute P and K Soil Test Survey

- State and private soil testing laboratories in the U.S. and Canada were surveyed.
- 2001 survey includes results of tests on 2.5 million soil samples collected in the fall of 2000 and spring of 2001, therefore the results reflect the fertility status entering the 2001 crop year.
- When possible, grid samples were analyzed separately from whole field samples.

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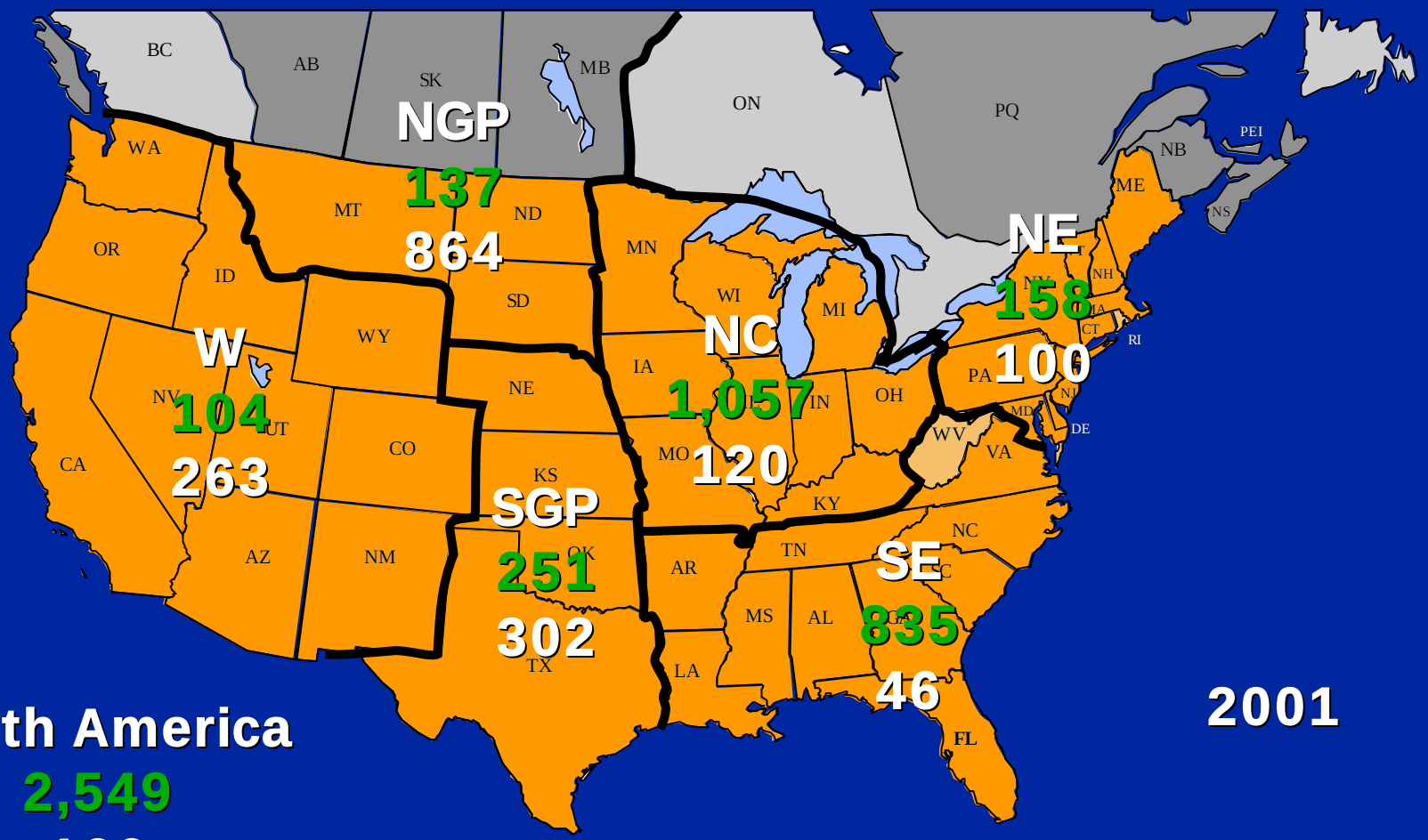
Wisconsin

- Survey results based on over 38 thousand soil samples.
- Based on the number of soil samples and crop land in WI, each soil sample represents approximately 203 acres.
- “Medium” defined by state recommendations:

Soil Sampling Density in the 2001 Summary.



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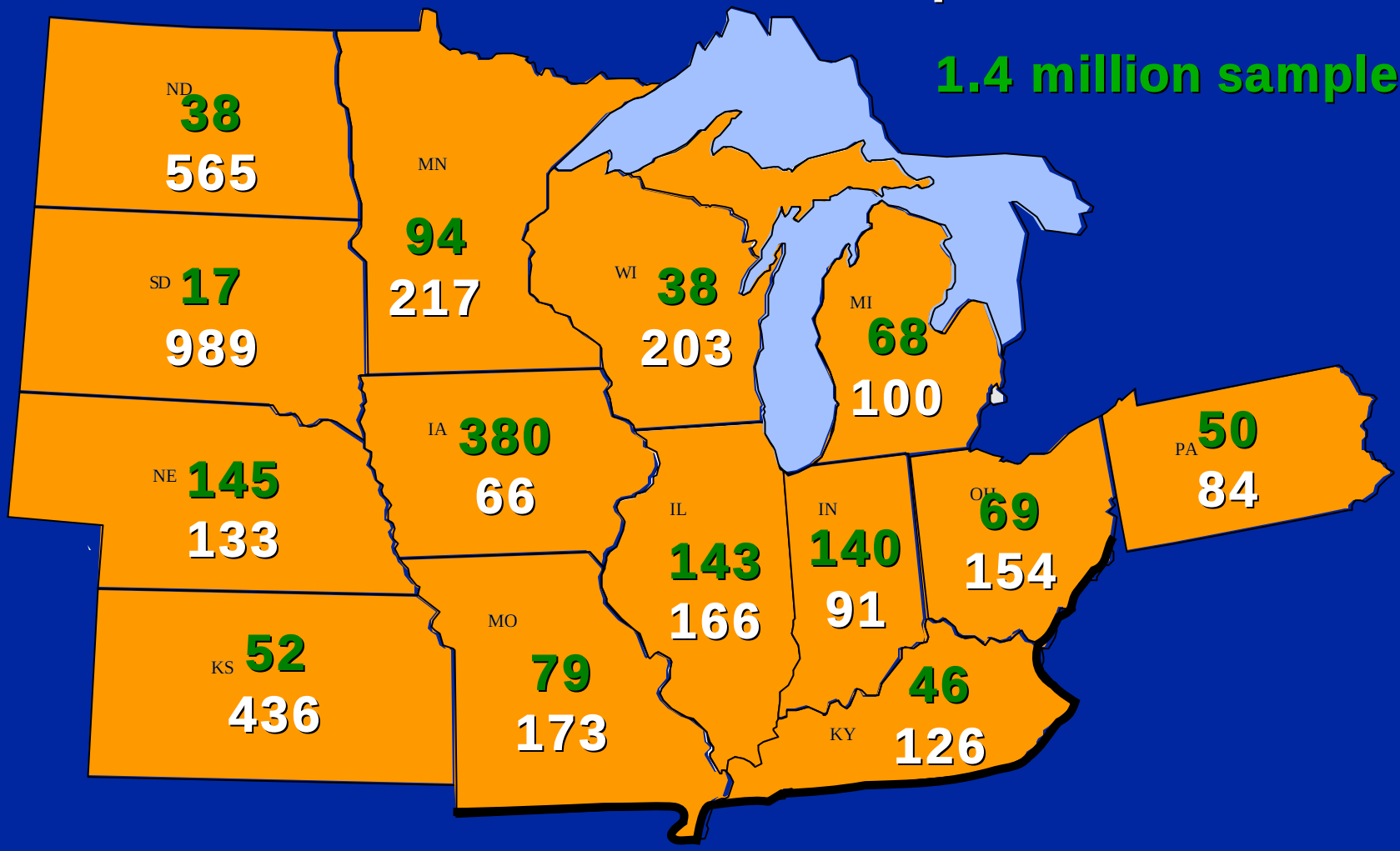


Phosphorous

Percent of Soils Testing Medium or Lower in P.

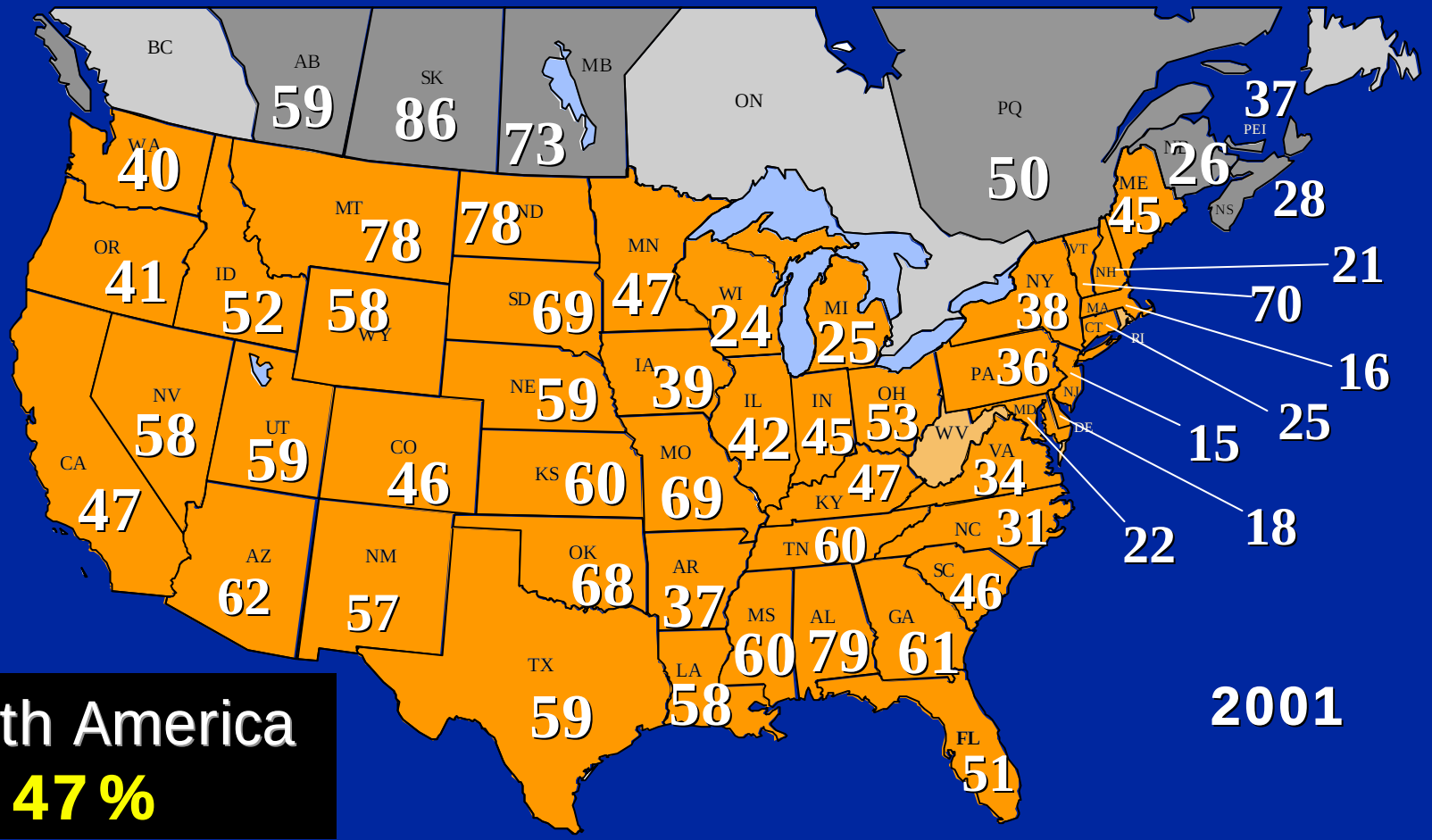
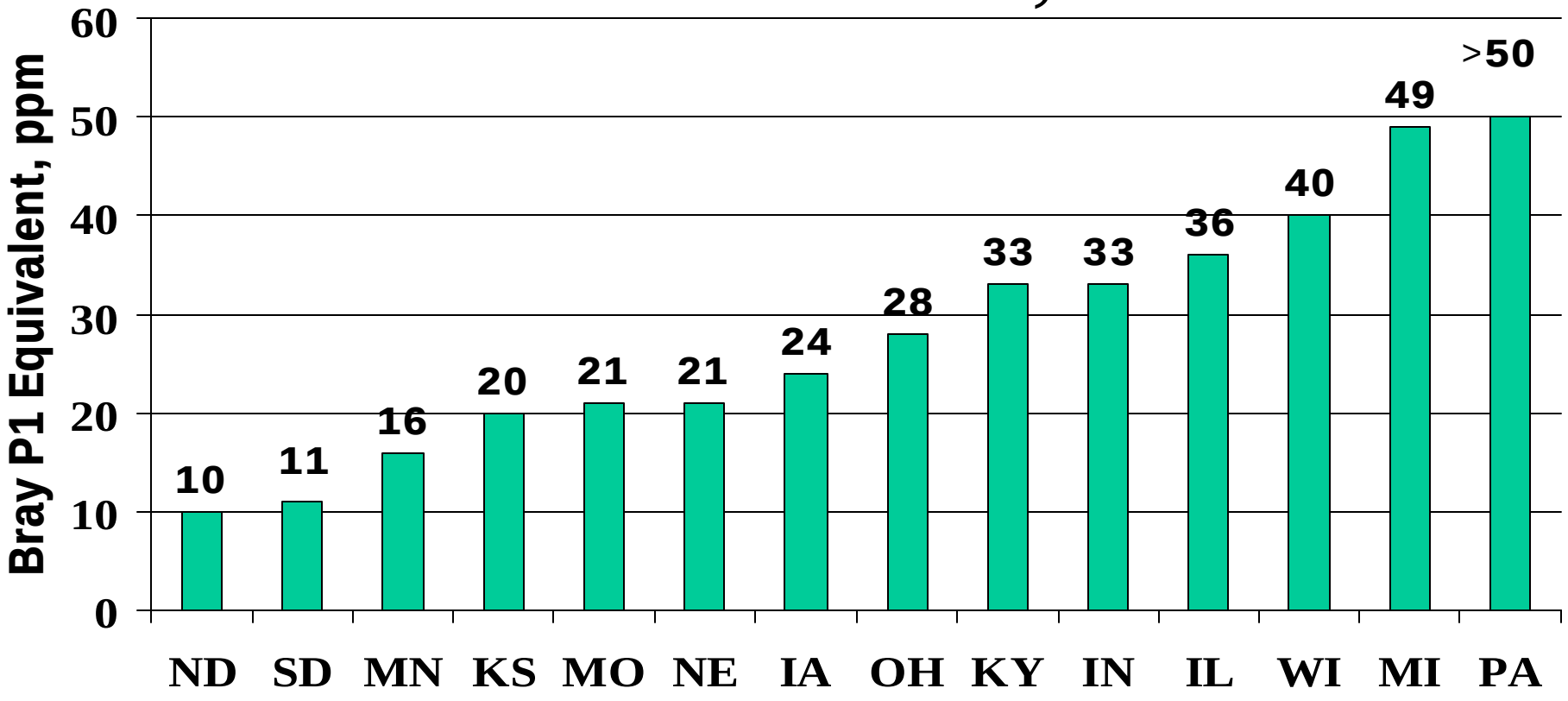


Table 1. Cumulative relative frequencies for soil test P in the WI region, sorted by P level and sampling density

State	Planted Acres 1,000	Sample density A/sam	Samples	Bray P-1 equivalent, ppm 0-5	6-10	11-15	16-20	21-25	26-30	31-40	41-50	>50	Medium or below
				Cumulative relative frequency, %									%
MN	20,293	217	93,587	5	28	47	60	69	76	85	90	100	47
IA	24,990	66	380,265	3	12	26	39	50	60	74	83	100	39
IL	23,671	166	142,619	1	3	18	17	27	38	57	71	100	42
WI	7,809	203	38,378	0	3	8	16	24	34	49	61	100	24
MI	6,768	100	67,927	0	2	5	11	17	25	38	50	100	25

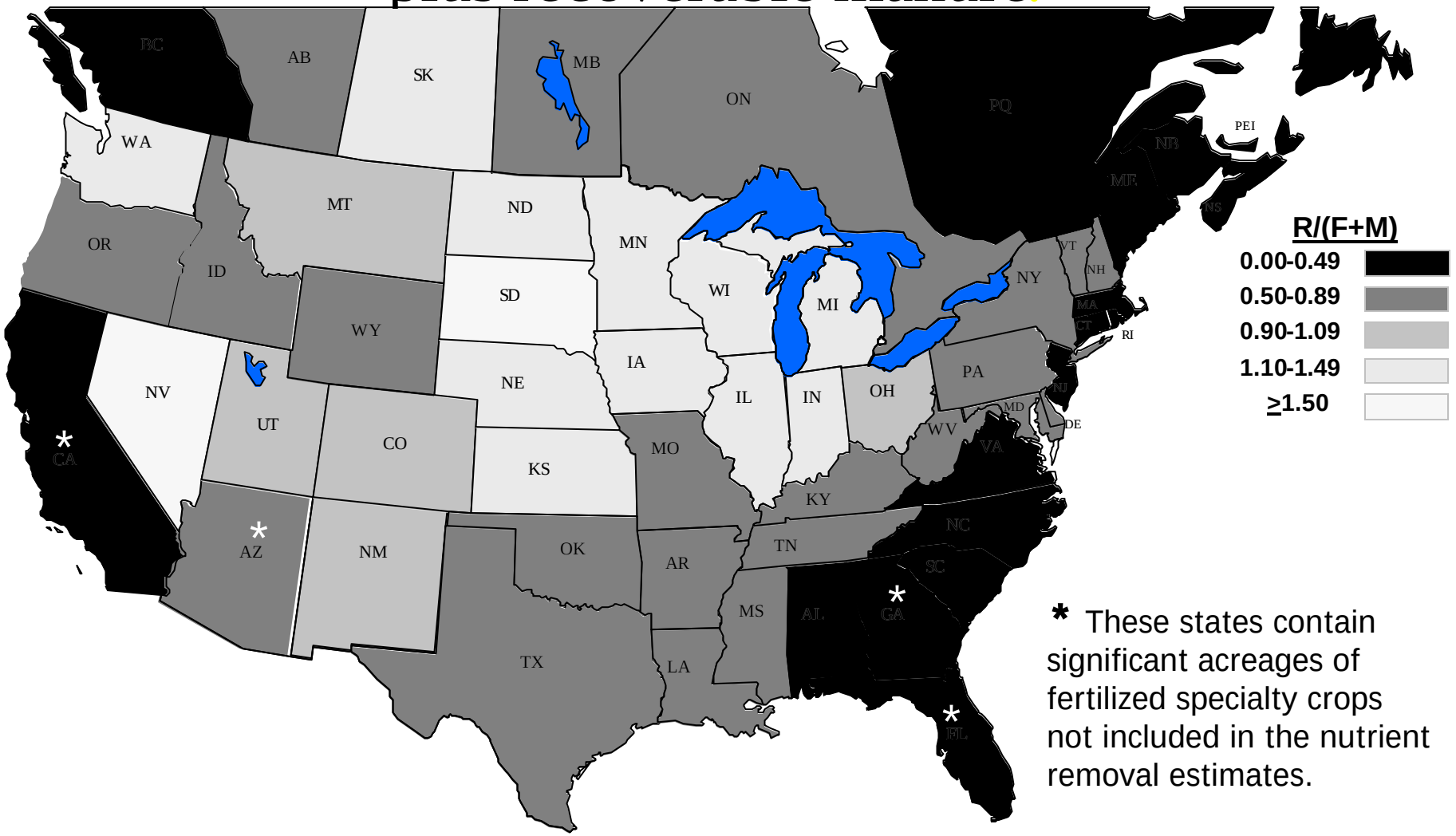
Median Bray P1 Equivalents for the Northcentral States, 2001



Partial Phosphorus Budget for Wisconsin

tate	Crop removal	Applied Fert	Recoverable Manure	Balance F-R	Balance F+M-R	Removal to use ratios R/F	Removal to use ratios R/(F+M)
VI	373	206	129	-167	-38	1.81	1.11
MN	873	515	195	-358	-163	1.70	1.23
A	1260	621	234	-639	-405	2.02	1.47
L	1126	705	77	-421	-344	1.60	1.44
MI	267	183	52	-84	-32	1.46	1.14

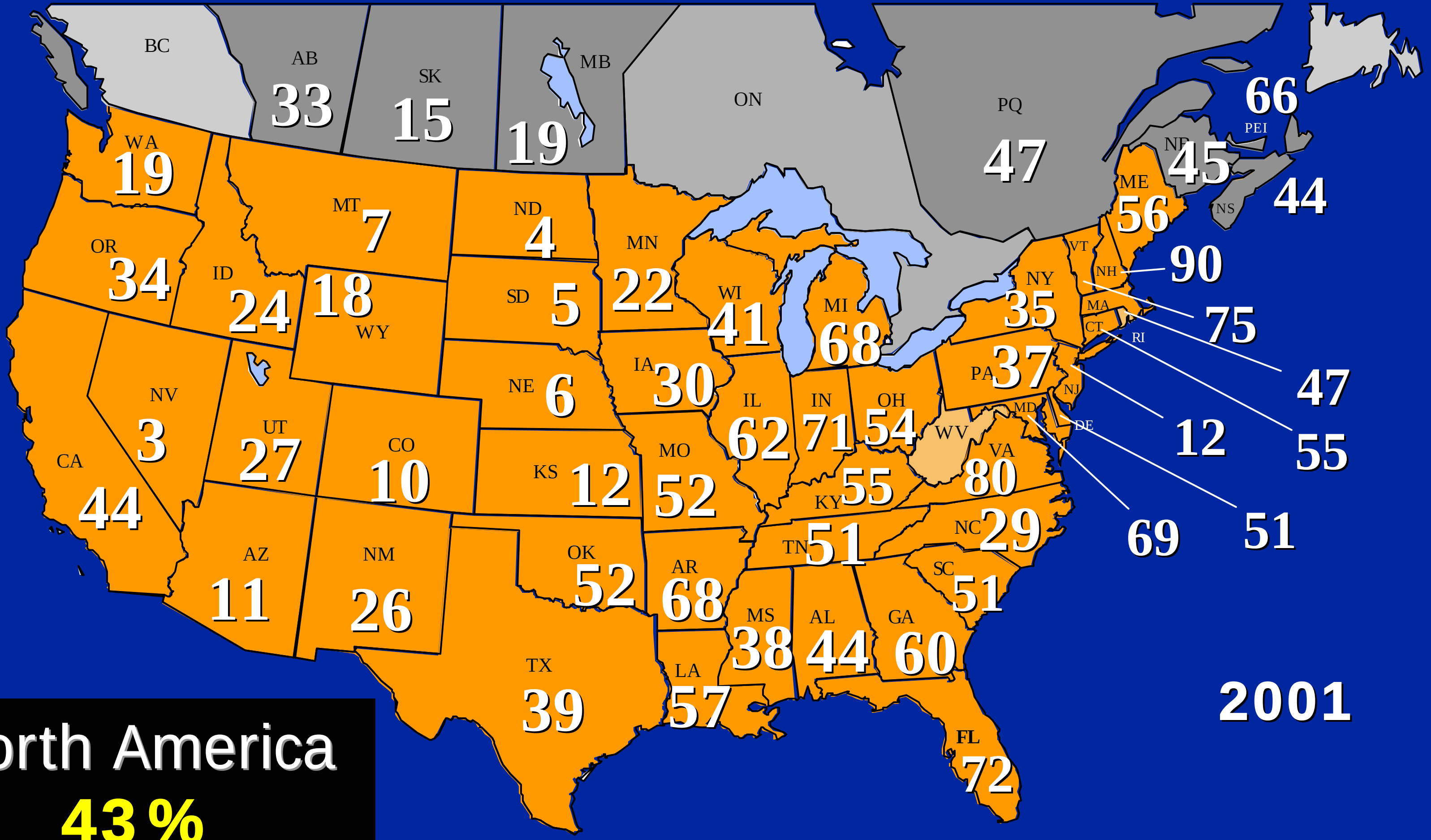
Ratio of P removal by common crops to fertilizer applied plus recoverable manure.



* These states contain significant acreages of fertilized specialty crops not included in the nutrient removal estimates.

Potassium

Percent of Soils Testing Medium or Lower in K.



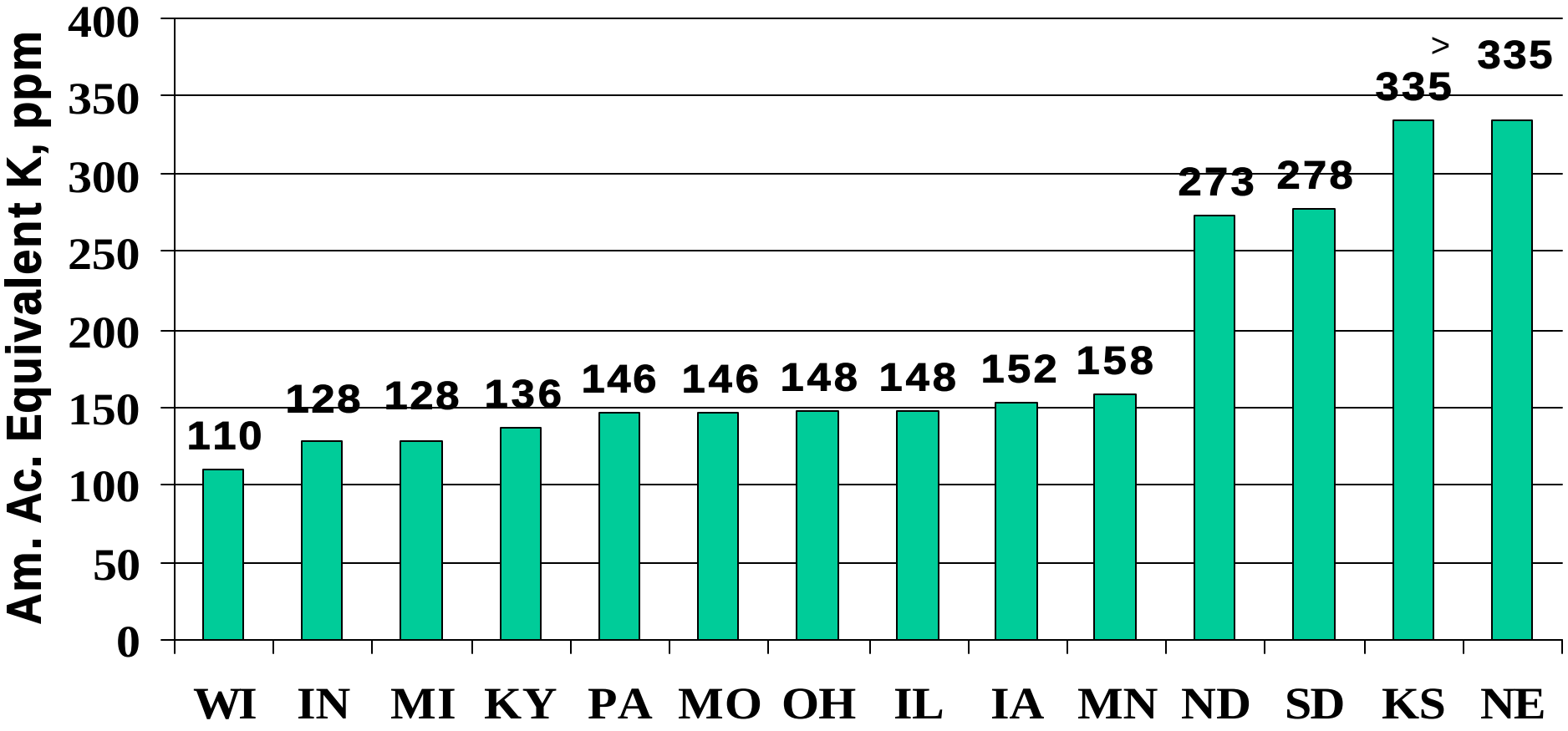
North America
43 %

2001

Table 2. Cumulative relative frequencies of soil test K in the WI region sorted by K level

		Ammonium acetate equivalent K, ppm									Medium
		0-40	41-80	81-120	121-160	161-200	201-240	241-280	281-320	>320	or below
State	Samples	Cumulative relative frequency, %									%
MN	88,011	1	5	22	51	71	81	87	91	100	22
IA	327,457	1	8	30	54	75	84	90	93	100	30
IL	142,625	1	9	32	56	75	85	91	95	100	62
WI	38,386	2	25	57	77	88	93	96	98	100	41
MI	67,988	2	15	44	70	85	92	96	98	100	71

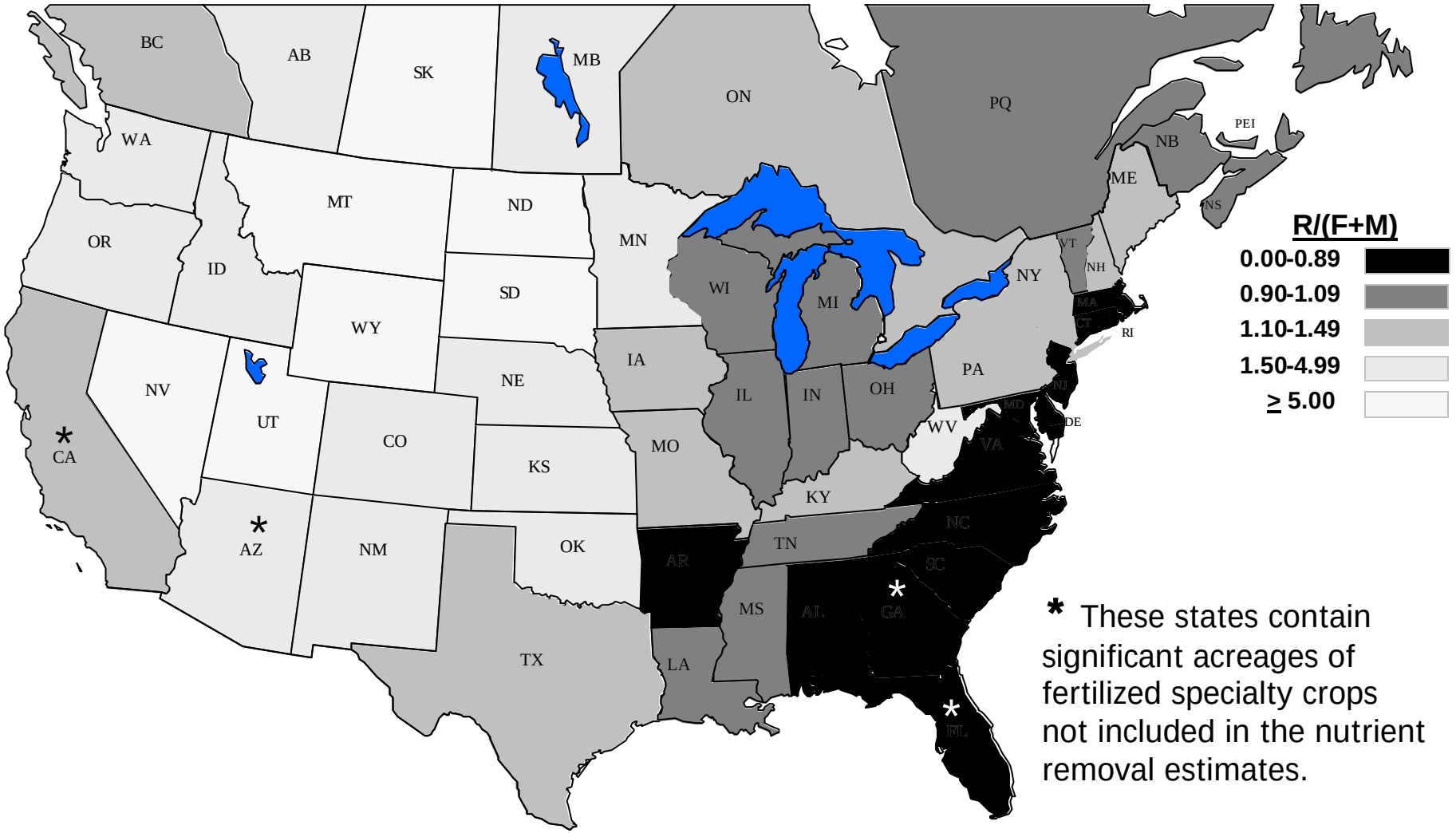
Median Ammonium Acetate K Equivalents for the Northcentral States, 2001



Partial Potassium Budget for Wisconsin

State	Crop removal	Applied Fert	Recoverable Manure	Balance		Removal to use ratios	
				F-R	F+M-R	R/F	R/(F+M)
WI	708	567	222	-141	81	1.25	0.90
MN	1284	584	224	-700	-486	2.20	1.59
IA	1557	880	290	-677	-387	1.77	1.33
IL	1293	1243	98	-50	48	1.04	0.96
MI	504	419	72	-85	-13	1.20	1.03

Ratio of K removal by common crops to fertilizer applied plus recoverable manure.



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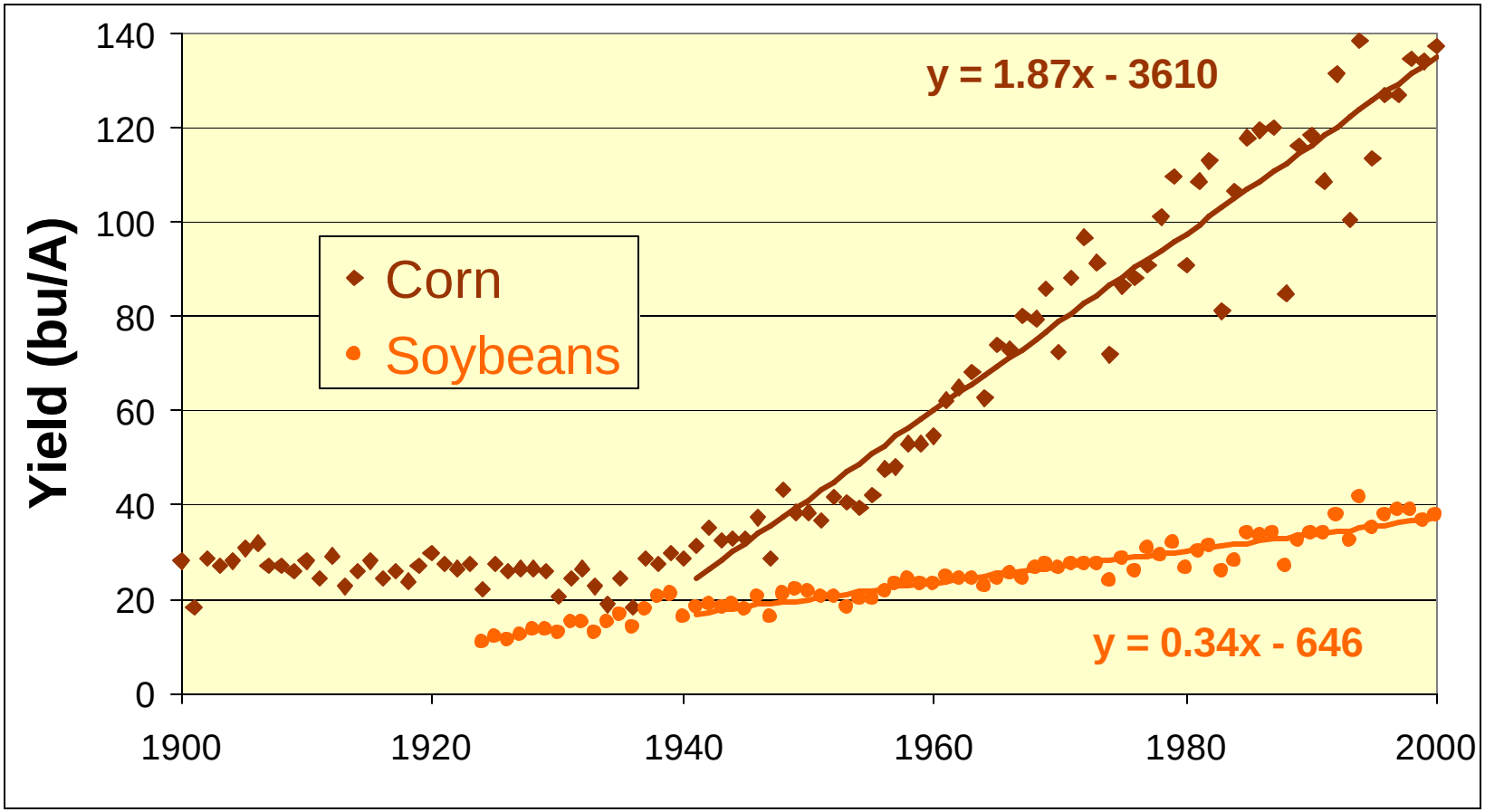
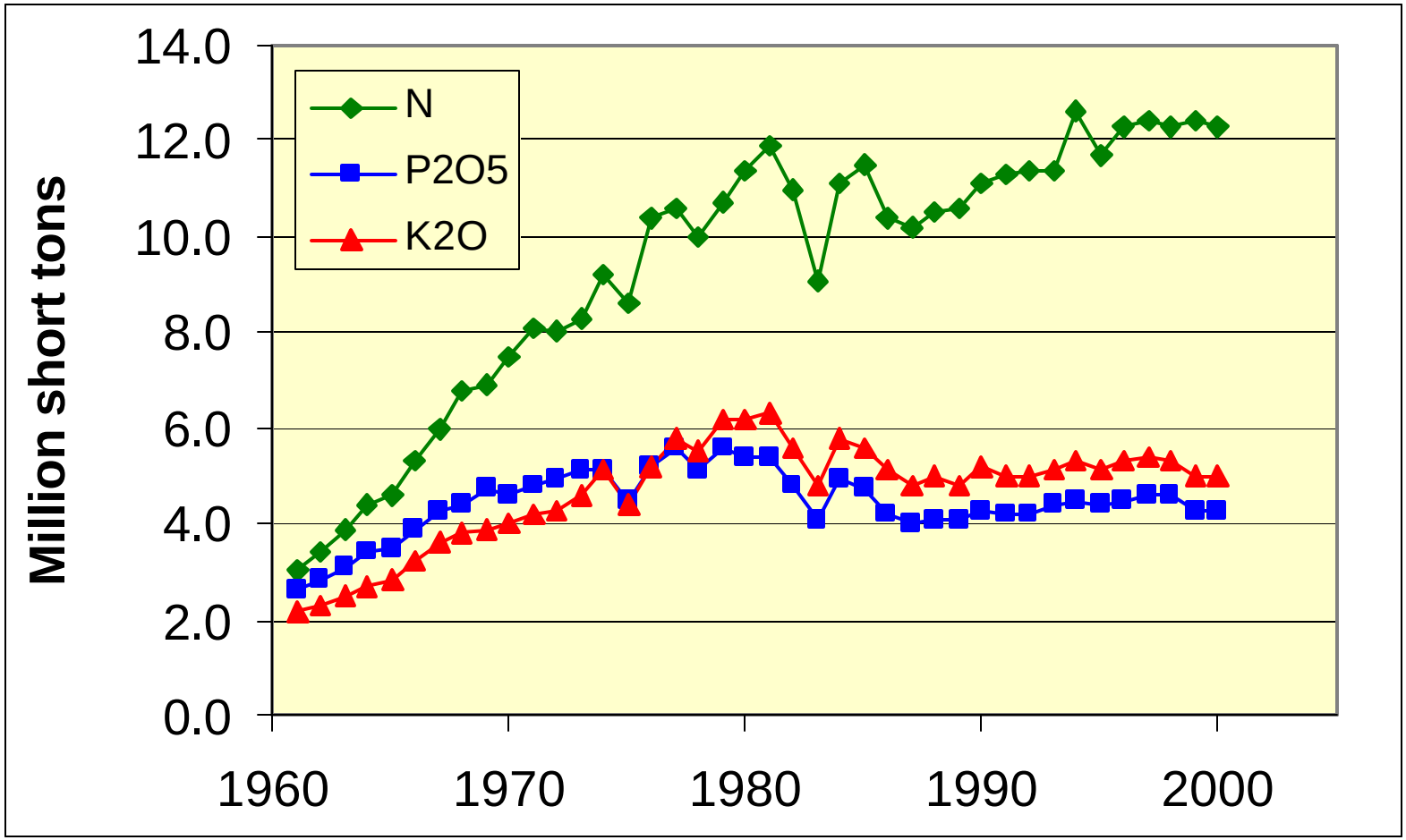
What's going on?

- Increased yields of almost all crops, particularly corn and soybeans.
- Acreage of soybeans has been increasing, relative to corn, which means increased removal of K.
- Low crops prices lead to reduced P and K fertilization.
- Farm economy.
- Accuracy of removal numbers at higher yield levels??
- Soil test accuracy??
- Cash rent "mining".
- Reluctance of landowner in cost sharing adequate fertilizer use.
- Reduced emphasis on P and K sales at dealer level?

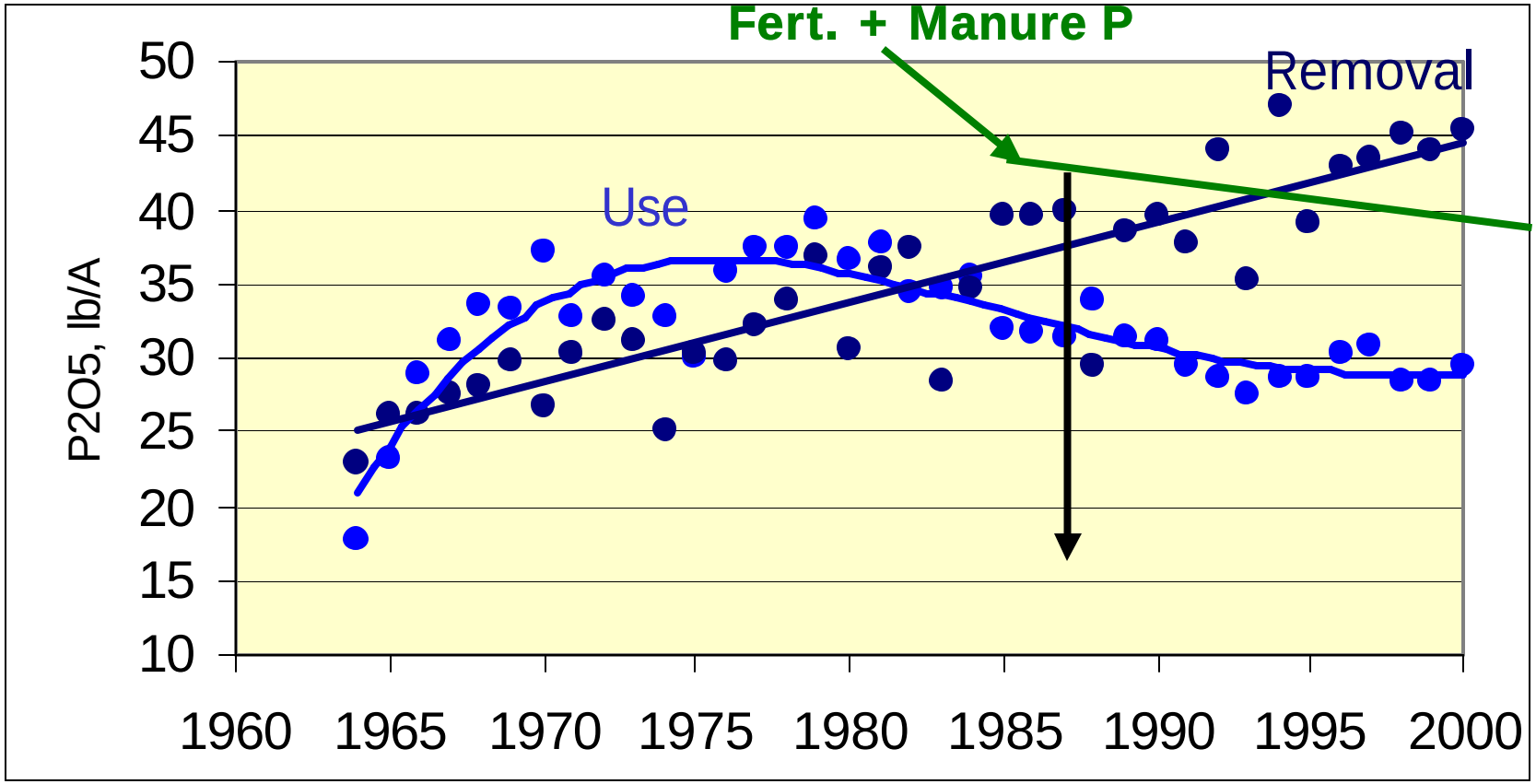
U.S. Corn and Soybean Yields



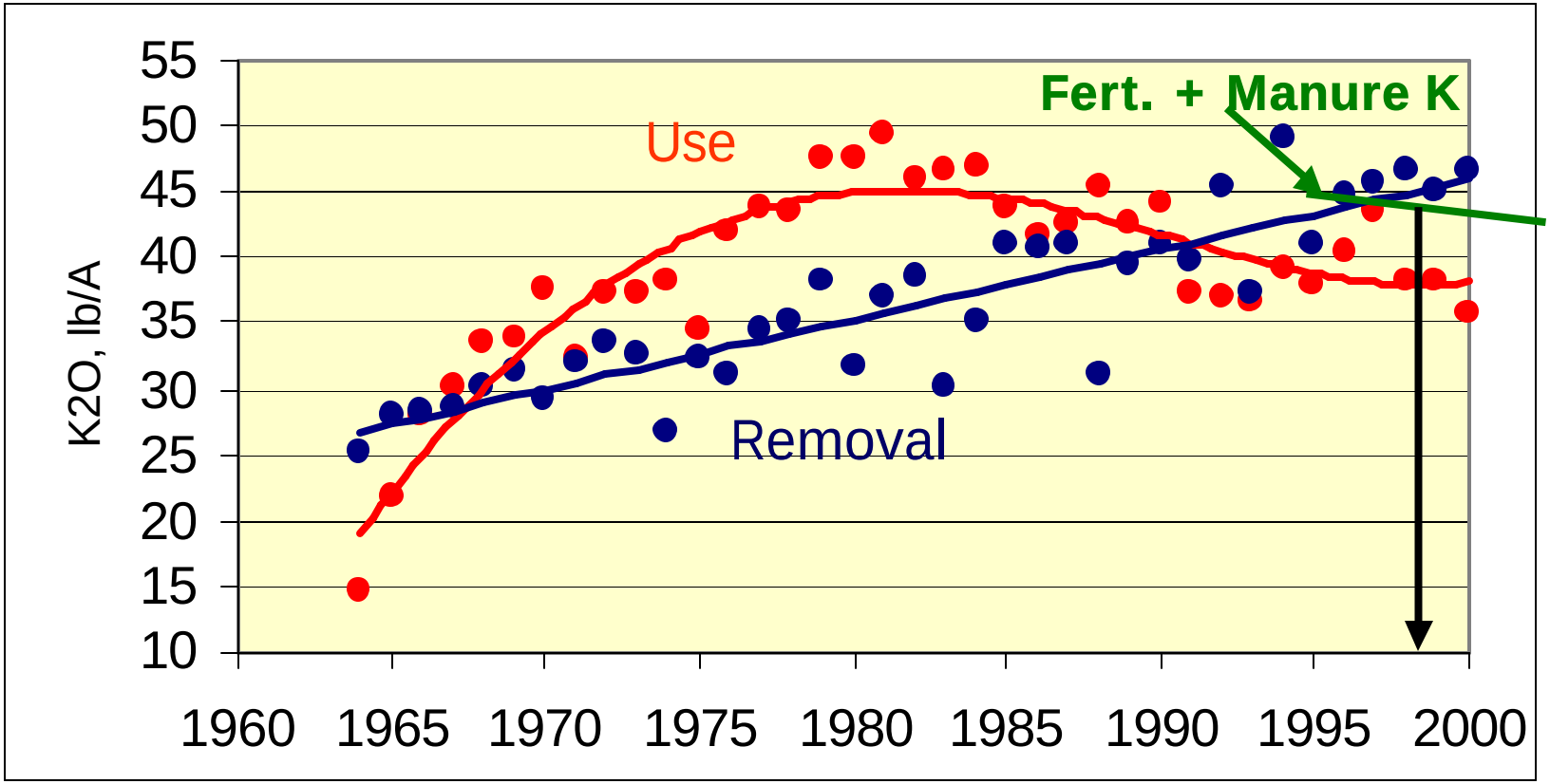
Commercial Fertilizer use in the U. S.



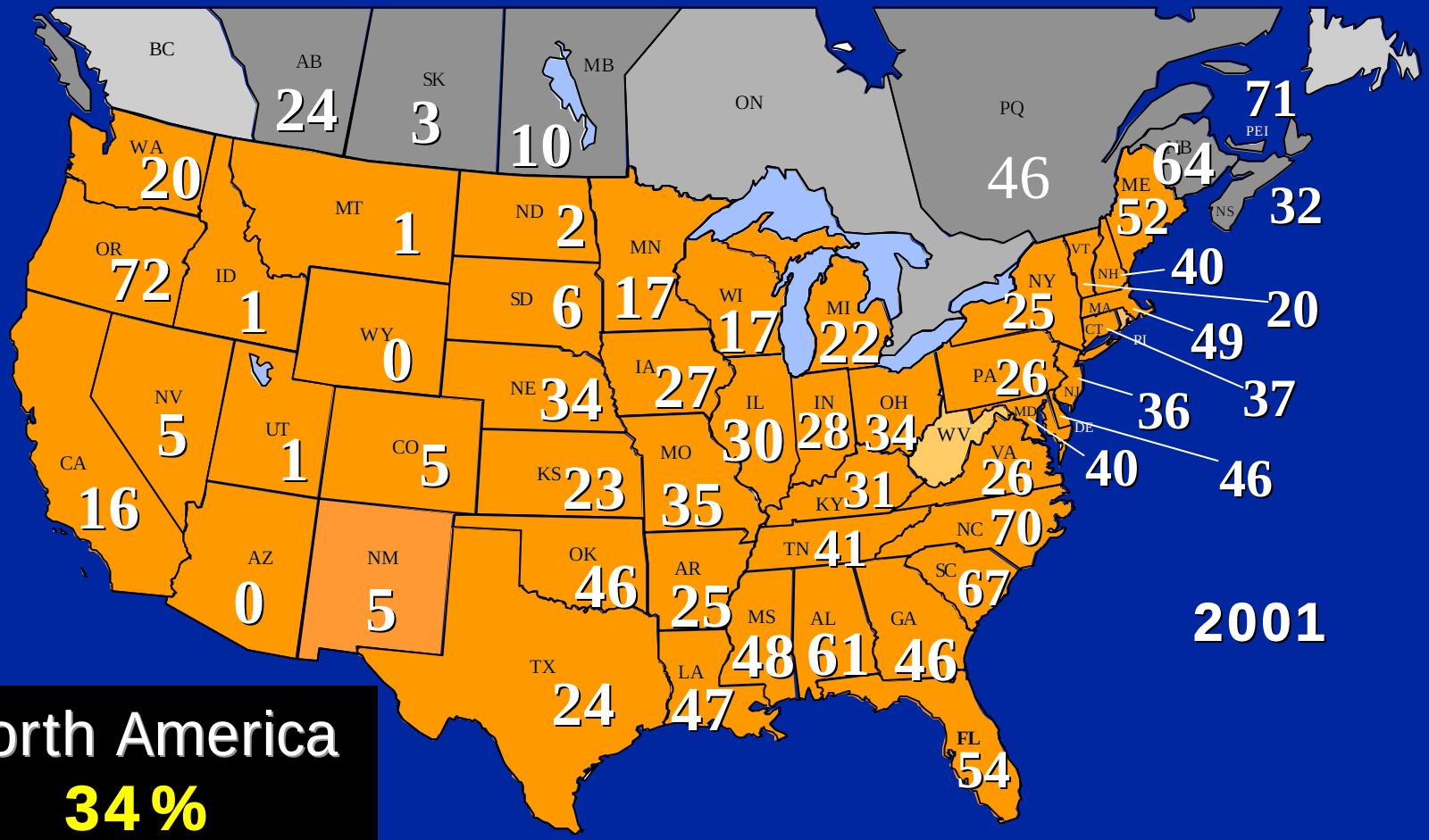
Average P Use on Corn and Soybeans in the U.S. Relative to Crop Removal



Average K Use on Corn and Soybeans in the U.S. Relative to Crop Removal



Percent of Soils Testing 6.0 pH or Less.



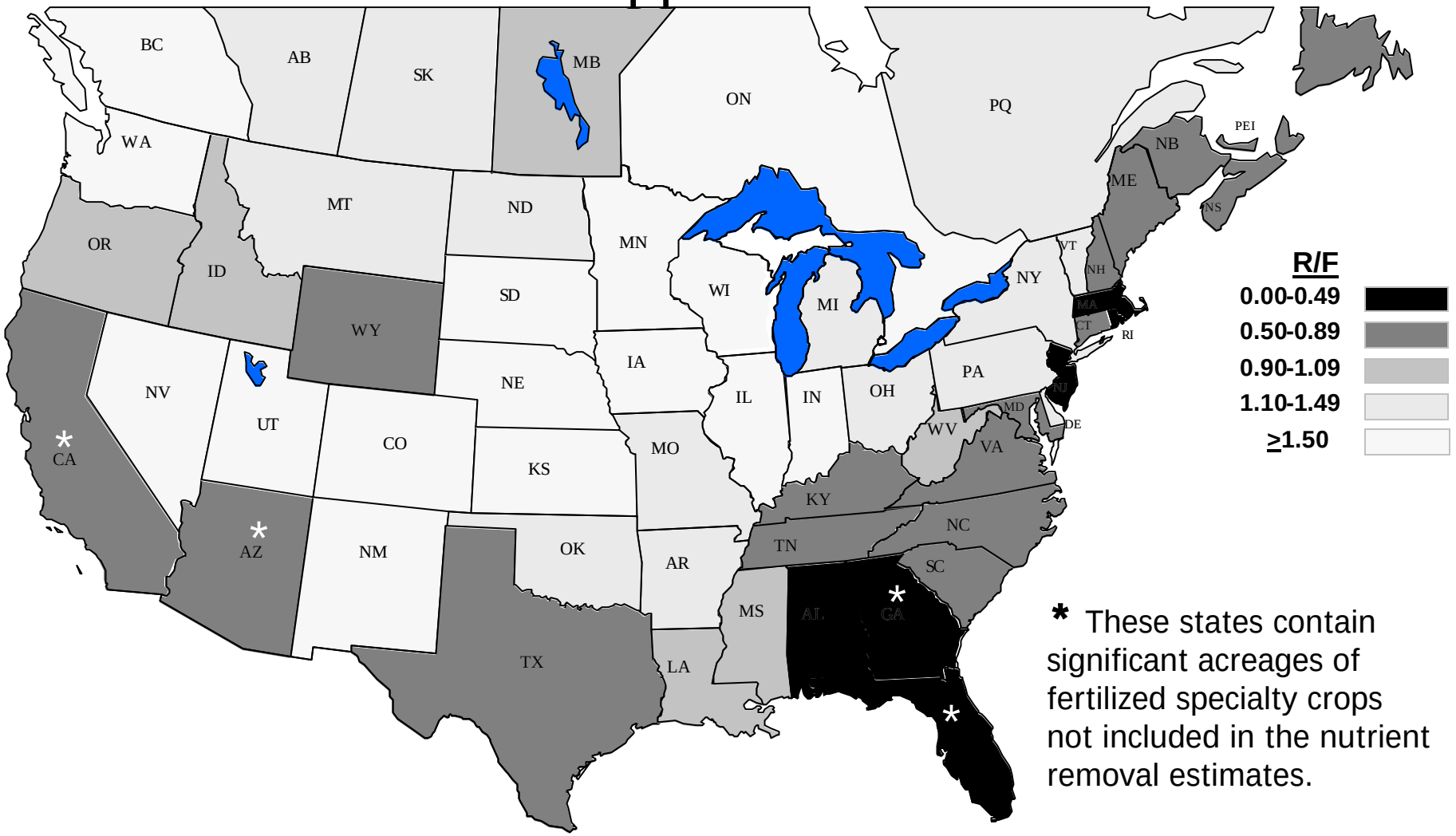
How is Wisconsin Doing?

Percent of soil tests medium or lower

	1997	2001
P_2O_5	23	24
K_20	55	41
pH ≤6.0	20	17

Thank You

Ratio of P removal by common crops to fertilizer applied.



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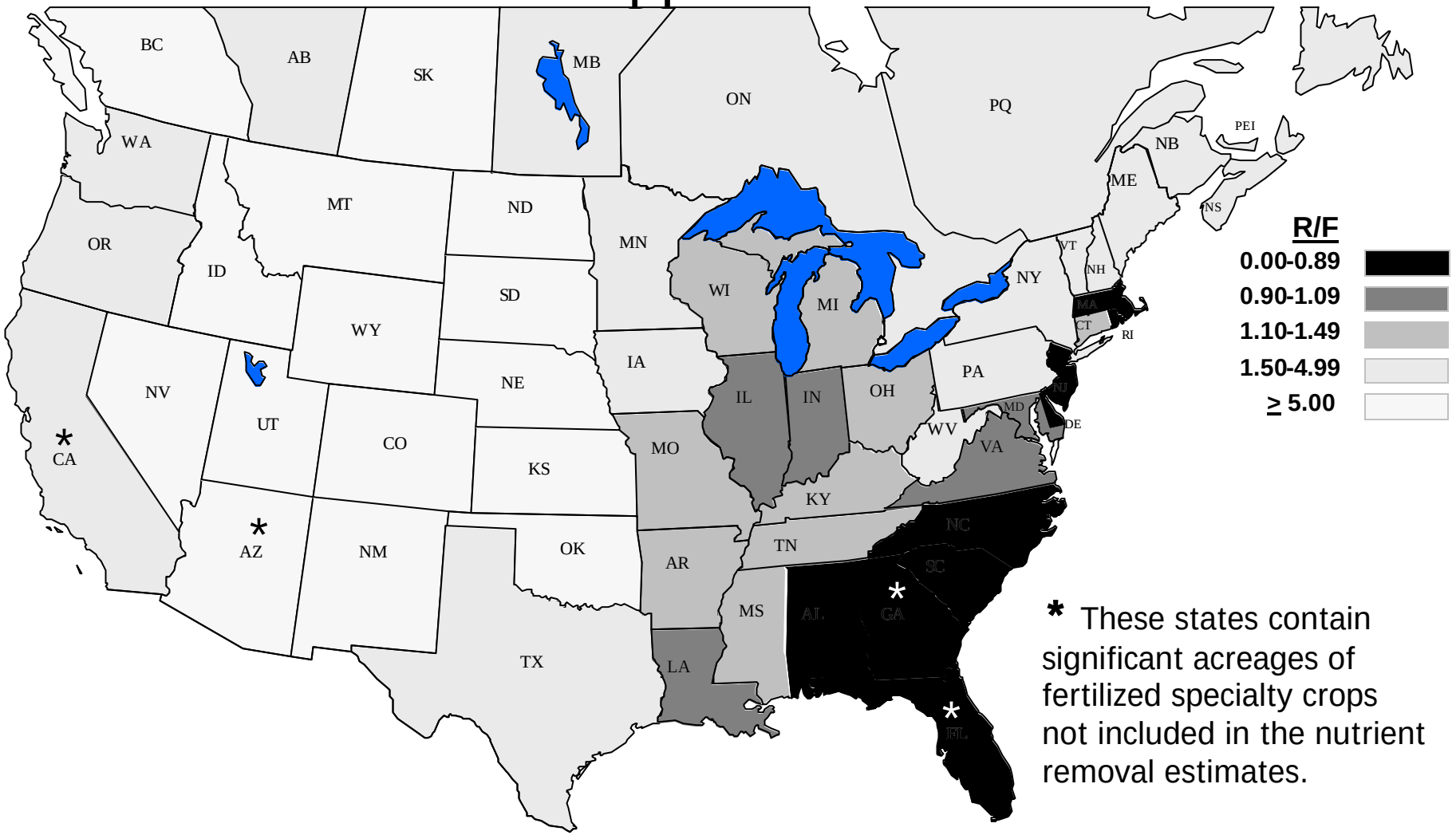

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Percent of Soil Samples Testing Medium or below in P in the Great Plains and Corn Belt.