Importance of soil characterization data to nutrient management planning

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Soil Tables for NMP

SnapPlus nutrient management planning software

By County: Map Unit: Major Component: 9754 rows

Crop nutrient recommendations

Soil group

Soil yield potential

Restrictions on manure or fertilizer applications

Fall nitrogen application restrictions for soils with leaching risk (590)

Soils where manure application may be prohibited for CAFOs (NR243)

NMP Models Using Soil Data

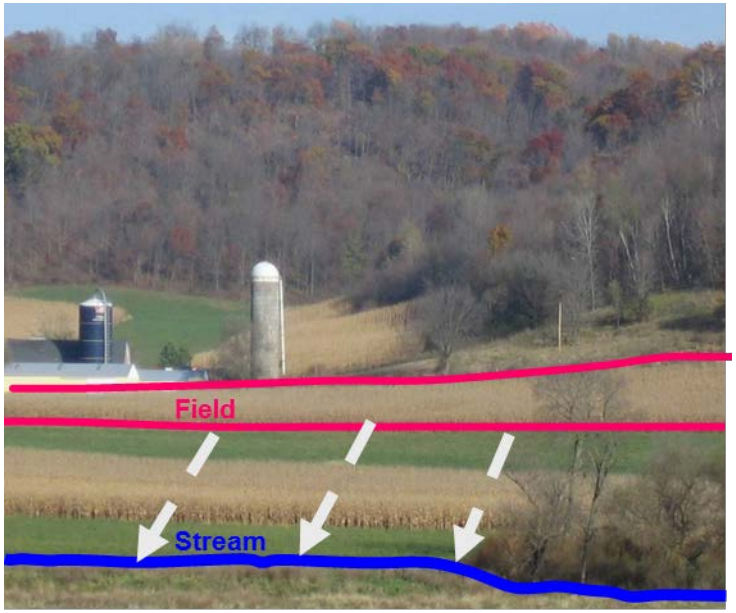
SnapPlus nutrient management planning software

RUSLE2 Erosion:

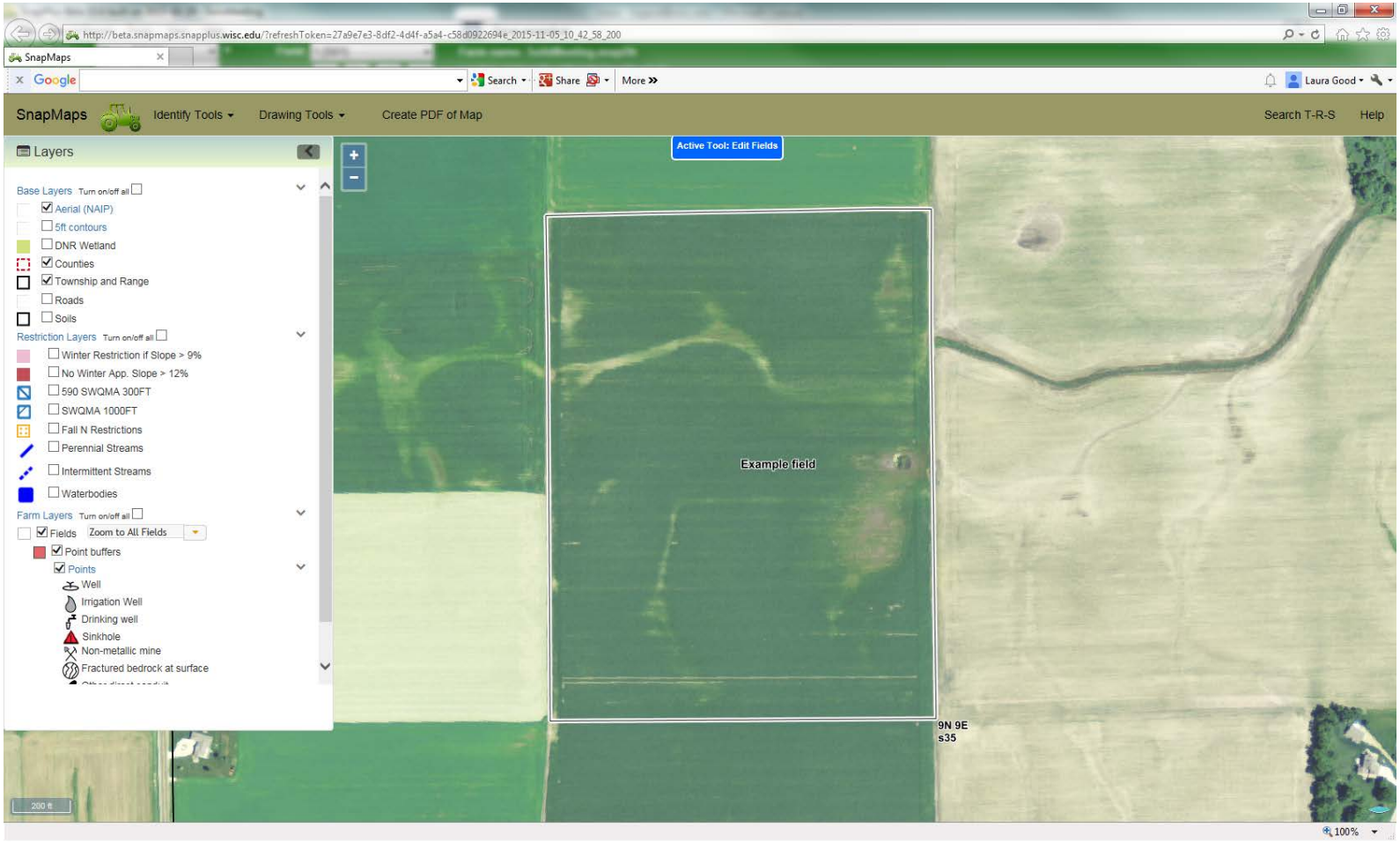
- Average Tons per acre per year
- Manure or fertilizer can not be applied if field soil loss > Tolerable soil loss (T)

Phosphorus runoff to surface water (P Index) :

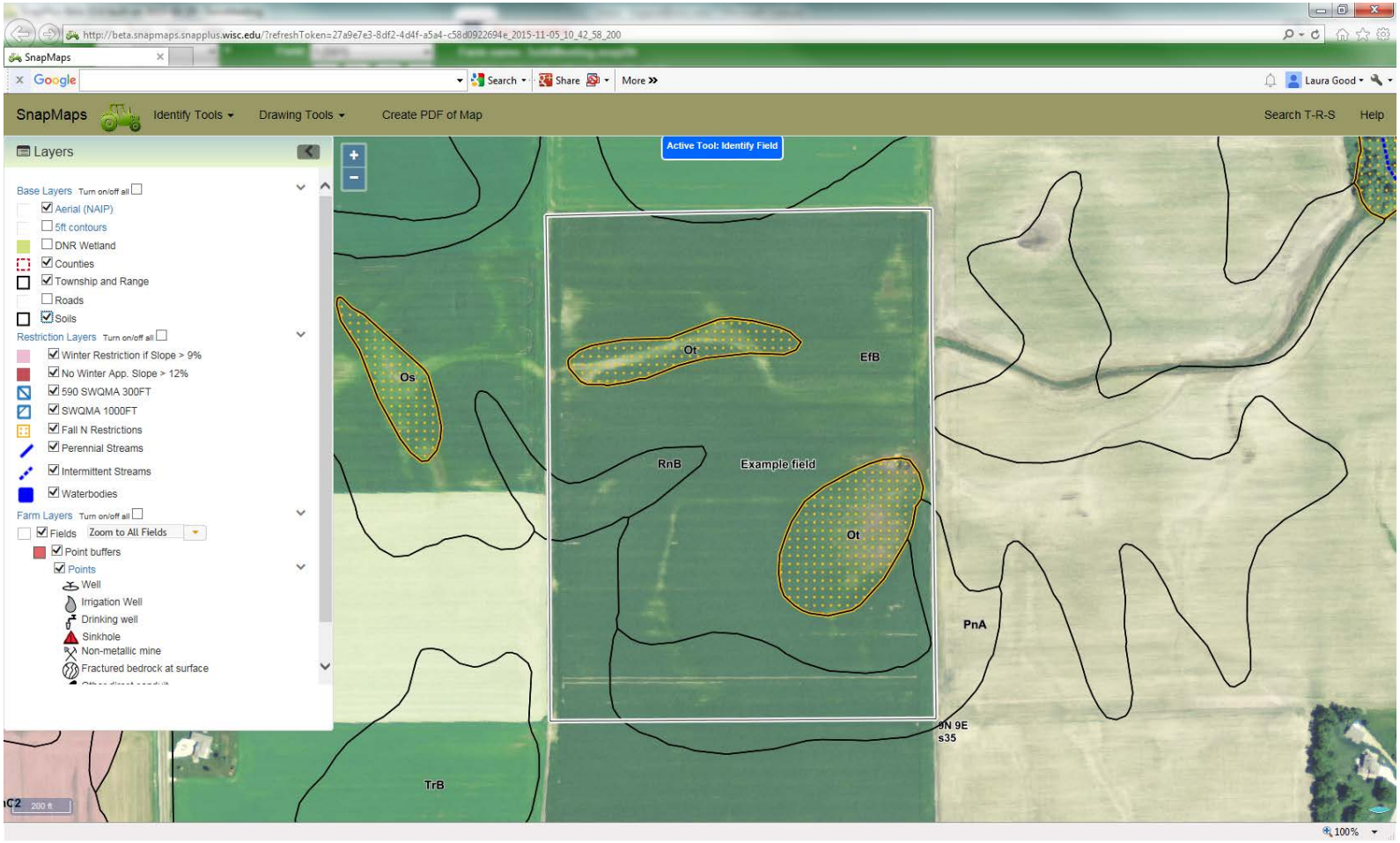
- Average lb per acre per yr
- Manure can not be applied if P Index > 6



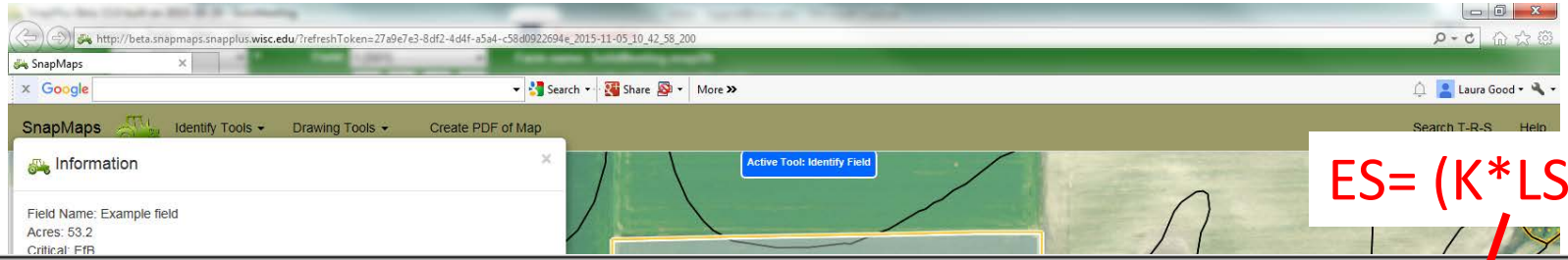
SnapMaps: Draw fields



SnapMaps: ID restrictions



SnapMaps: ID soils



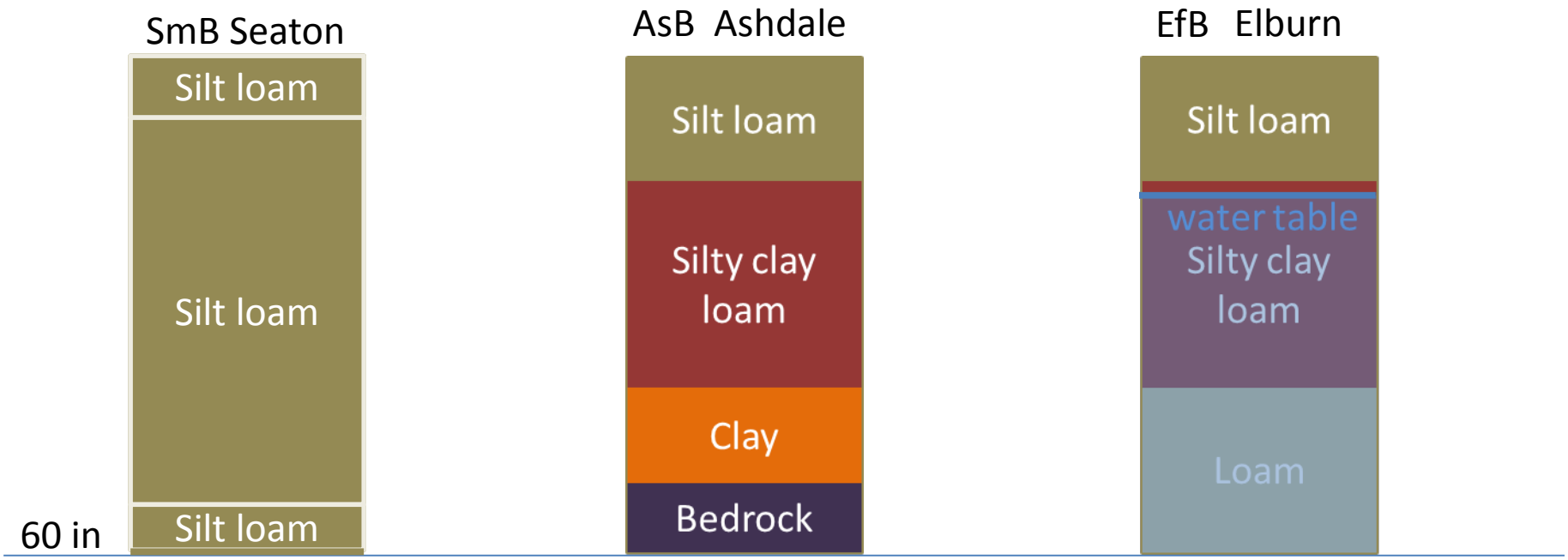
ES= (K*LS)/T

Subfarm Name	County	Field Name	Map Symbol	Slope	Slope Length	% of field	Soil Group	Yield Potential	K	T	ES	Fall N Restriction
	Dane	Example field	EfB	2.5	200	64.8	L	H	0.37	5	0.022	
	Dane	Example field	PnA	1	250	12.6	L	H	0.37	5	0.013	
	Dane	Example field	Ot	1	250	11.8	L	M	0.37	5	0.013	W
	Dane	Example field	PnB	4	200	6.9	L	H	0.37	5	0.039	
	Dane	Example field	RnB	4	200	4.0	L	H	0.32	5	0.034	

Field County	Field Acres	Soil Map Symbol (critical)	Soil Map Symbol (predominant)	Slope	Slope Length
Dane	53.15	EfB	EfB	2.5	200

Soils make a difference in NMP models

Dane County silt loams, 4 % slope, 200 ft slope length
Corn and soybean rotation with fall chisel plowing and manure
Soil test P = 50 ppm, OM% = 3



SmB Seaton	AsB Ashdale	EfB Elburn
T = 5	T = 3	T = 5
Soil Loss = 4.7	Soil Loss = 3.4	Soil Loss = 3.4
P Index = 6	P Index = 5	P Index = 5

Soils make a difference in meeting soil loss criteria

K=0.49

SmB Seaton

T = 5

Soil Loss = 4.7

K=0.37

AsB Ashdale

T = 3

Soil Loss = 3.4

K=0.37

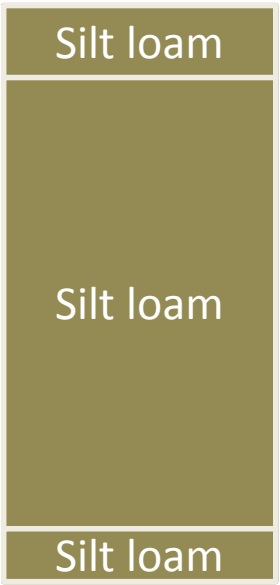
EfB Elburn

T = 5

Soil Loss = 3.4

Soils make a difference in P Index

SmB Seaton



P Index = 6

AsB Ashdale

P Index = 5

EfB Elburn

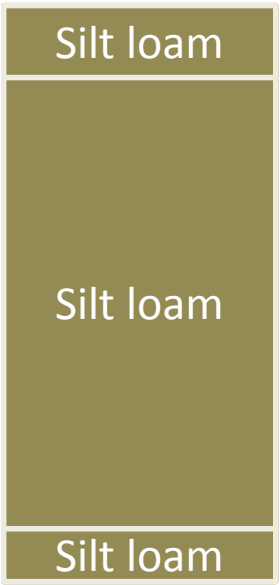
P Index = 5

Soils make a difference in P Index

Highest erosion rate

Same erosion rate, small differences in texture and aggregation

SmB Seaton



P Index = 6

Particulate P = 5.9

AsB Ashdale

P Index = 5

Particulate P = 4.3

EfB Elburn

P Index = 5

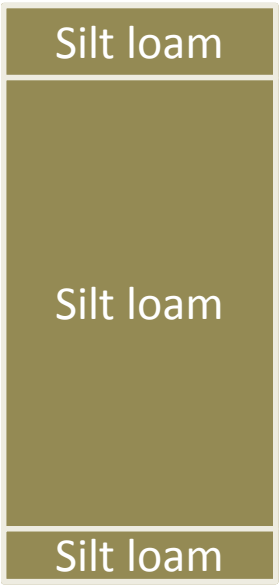
Particulate P = 4.2

Soils make a difference in P Index

Hydrologic soil group influences estimated runoff

B-moderately low

SmB Seaton



P Index = 6

B-moderately low

AsB Ashdale

P Index = 5

C-moderately high

EfB Elburn

P Index = 5

Dissolved P = 0.4 | Dissolved P = 0.4 | Dissolved P = 0.5

Soil survey characterization helps farmers protect water quality and maintain profitability

Soil survey characterizations limit farmers management options