Identifying the Dominant Critical Soil for NM Planning

& Other Plan Review Issues

- Tolerable soil loss
- N recommendations
- Spreading restrictions
- Spreader calibration

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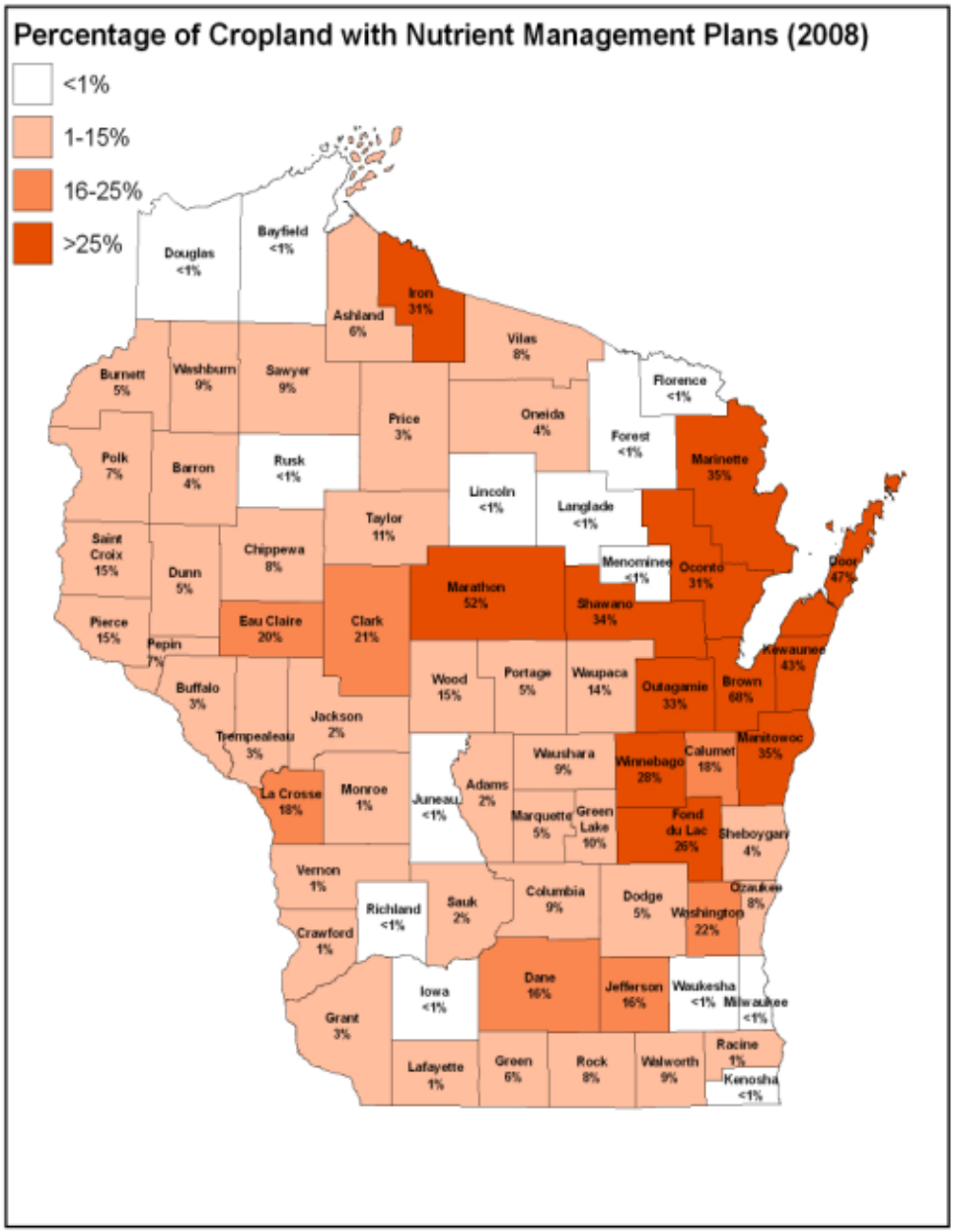
www.datcp.state.wi.us/arm/agriculture/land-water/conservation/nutrient-mngmt/planning.jsp

Nutrient Management - What's New?

- 1.6 million acres NM plans reported in 2008 (up 35% from 2007)
- 22 of 25 NM plans reviewed by the QAT used Snap Plus (up 14% from last year)
- 18 of 25 NM plans had every field meeting T (down 7%)
  - Plan whole rotation
  - RUSLE 2 update *Alfalfa (grassy, yr 3 +)*
  - Reflect soil disturbance *no-till crops with incorporated manure*
- Preliminary 2009 DATCP grants to:
  - $2.2M LCDs cost share for farmers - $1 M lapse for 09
  - $520K Implementation support
    - UW-Soils UW-NPM UW-Discovery Farms MALWEG Technical Colleges

2008 NM plans cover about 18% of WI cropland



NM Plan Checklists were submitted for 62 counties in 2008, 54 counties in 2006.

Marathon reported ~148,000 NMP acres, 39,000 acre increase from 2007 (52% of cropland).

Brown ~104,000 acres (68% of cropland).

Door~39,000 acres (47% of cropland)

Substantially more acres reported in 2008 than in 2007:

Manitowoc 23K

Kewaunee 20K

Dodge 16K

Chippewa 15K

Brown 14K

Walworth 11K

Columbia 10K

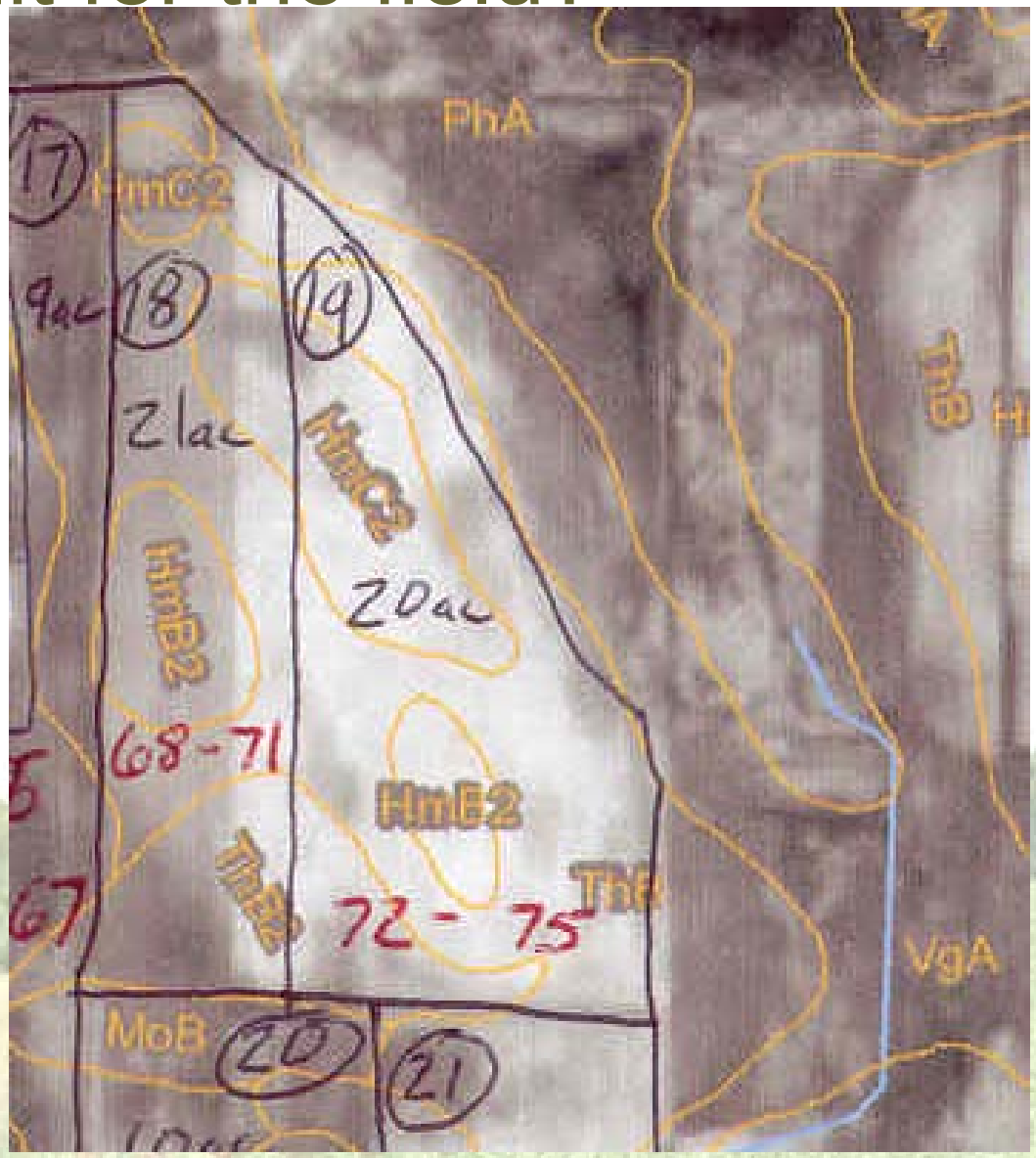
1. On Field 19, what is the dominant critical map unit for the field?

a. ThB

b. ThB2

c. HmC2

d. HmB2



11 of 25 plans, 44%, used the proper soil type.

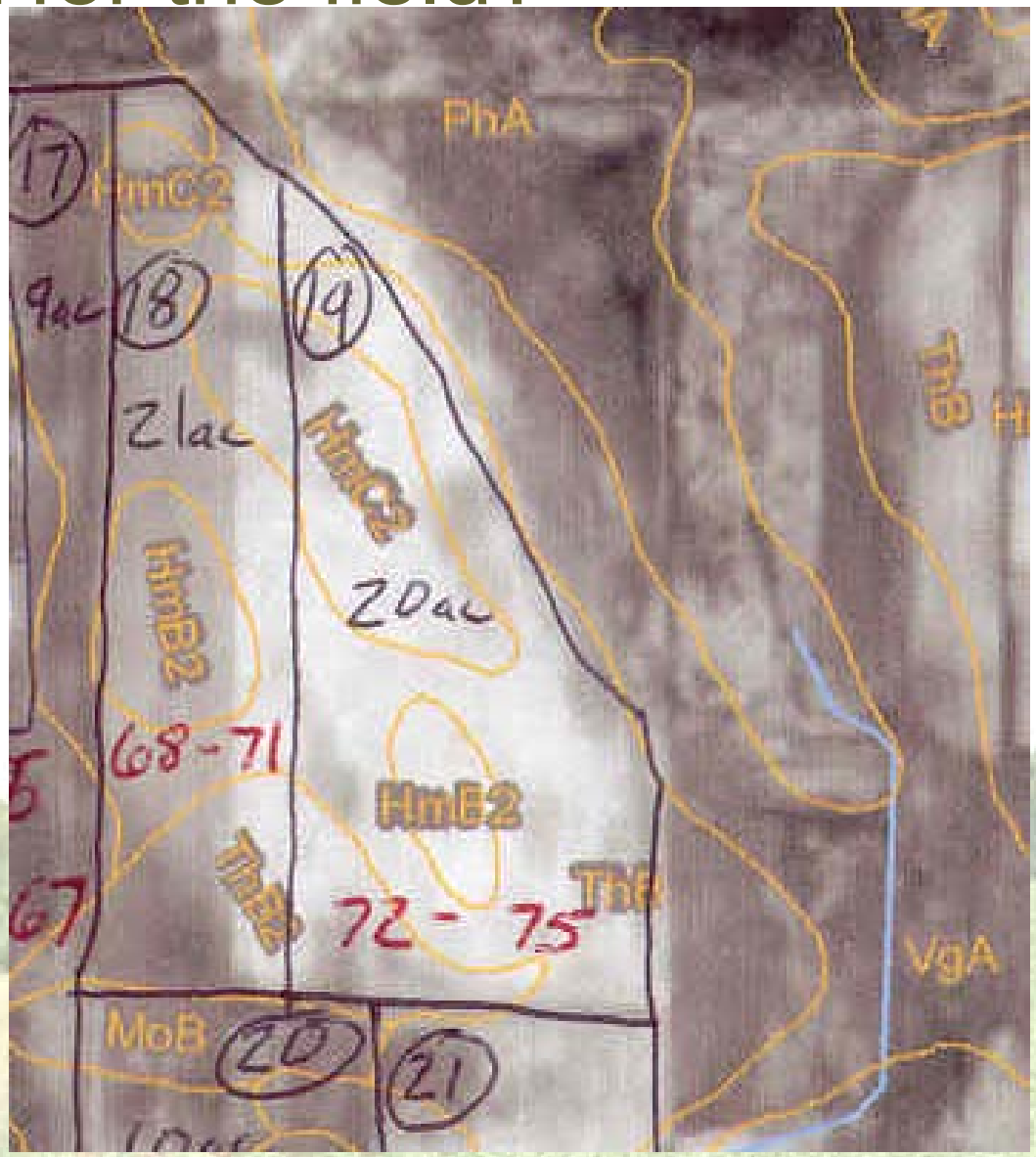
2. On Field 18, what is the dominant critical map unit for the field?

a. ThB

b. ThB2

c. HmC2

d. HmB2

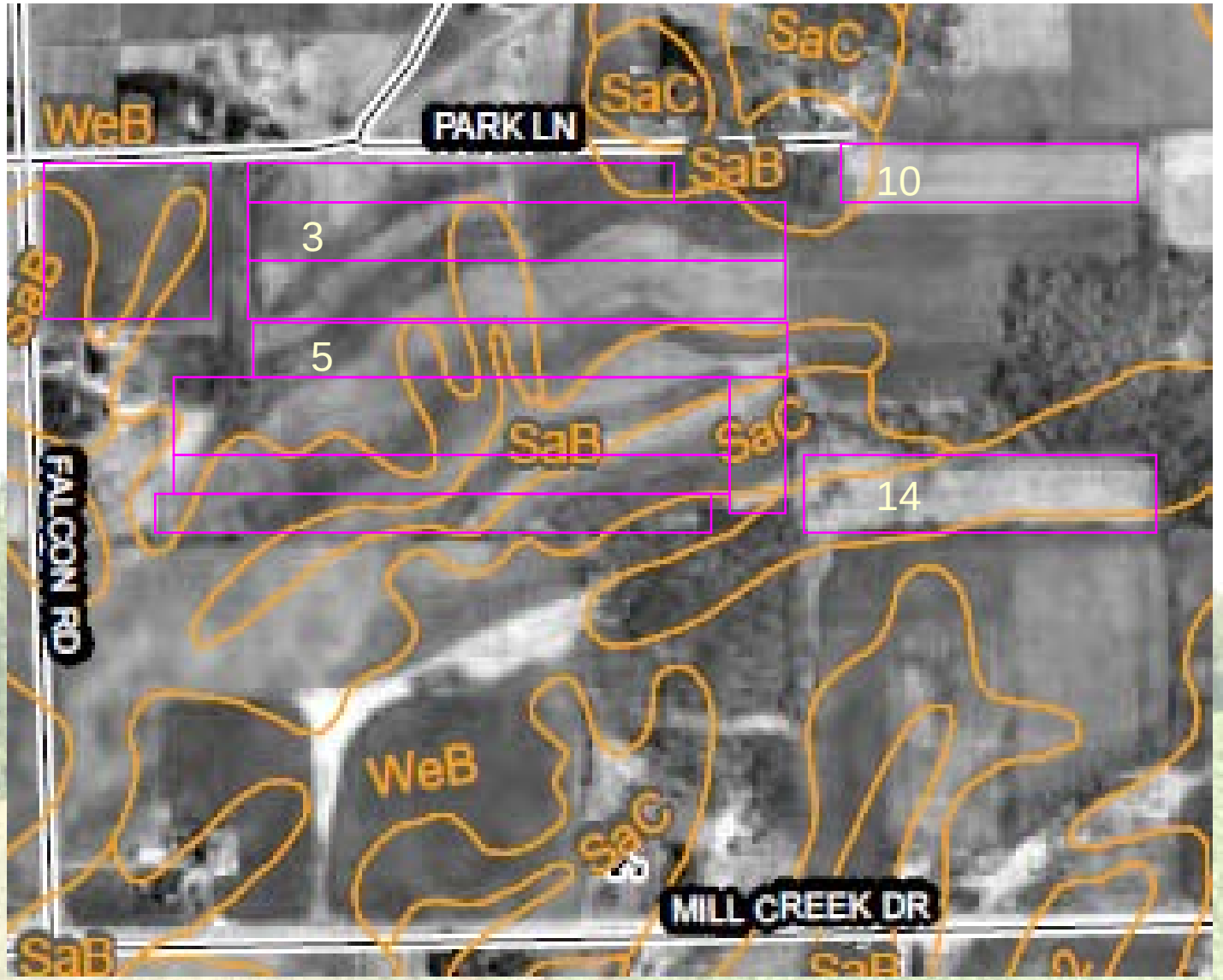


3. On Field 5, what is the dominant critical map unit for this field?

a. WeB

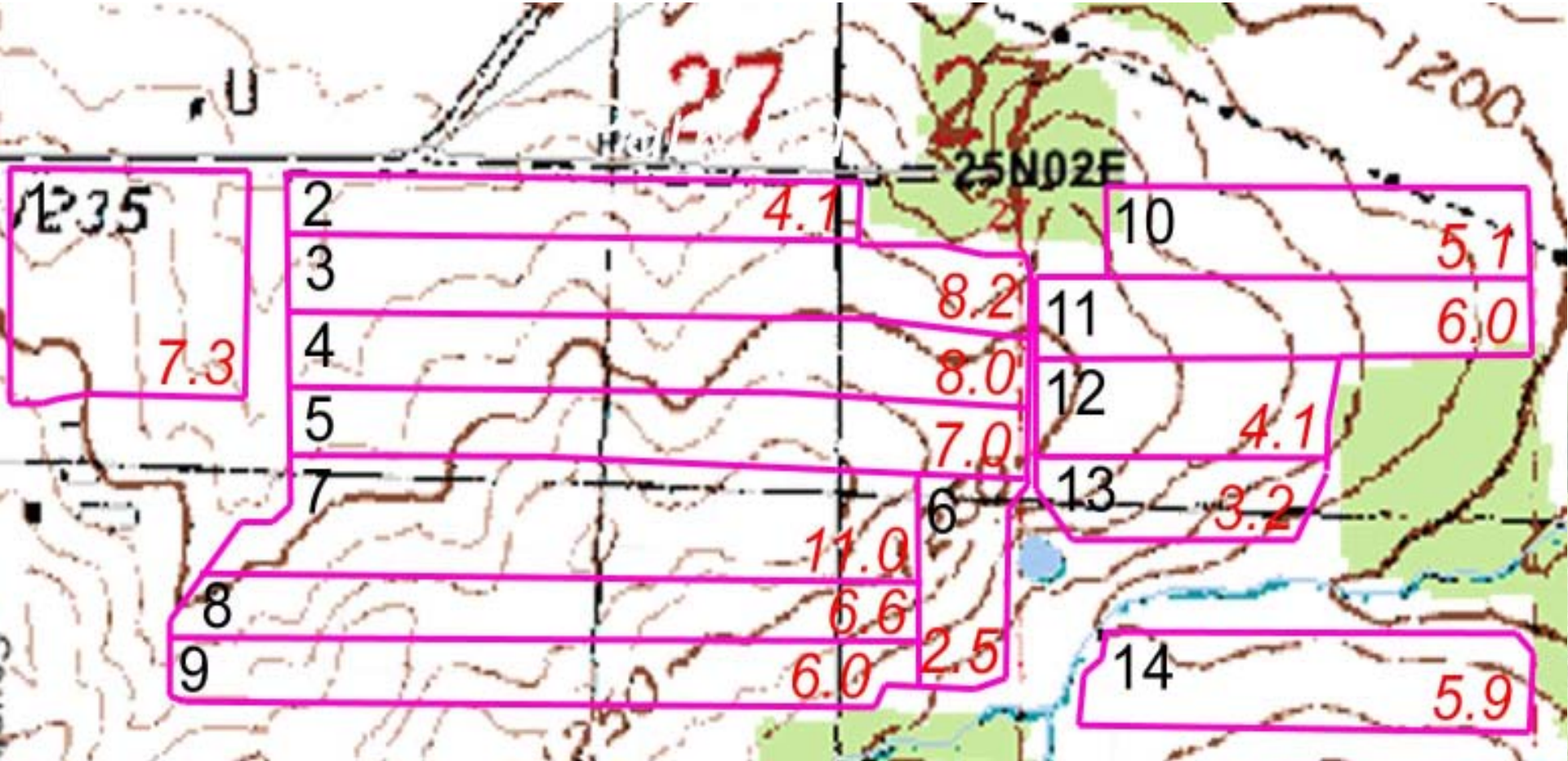
b. SaC

c. SaB



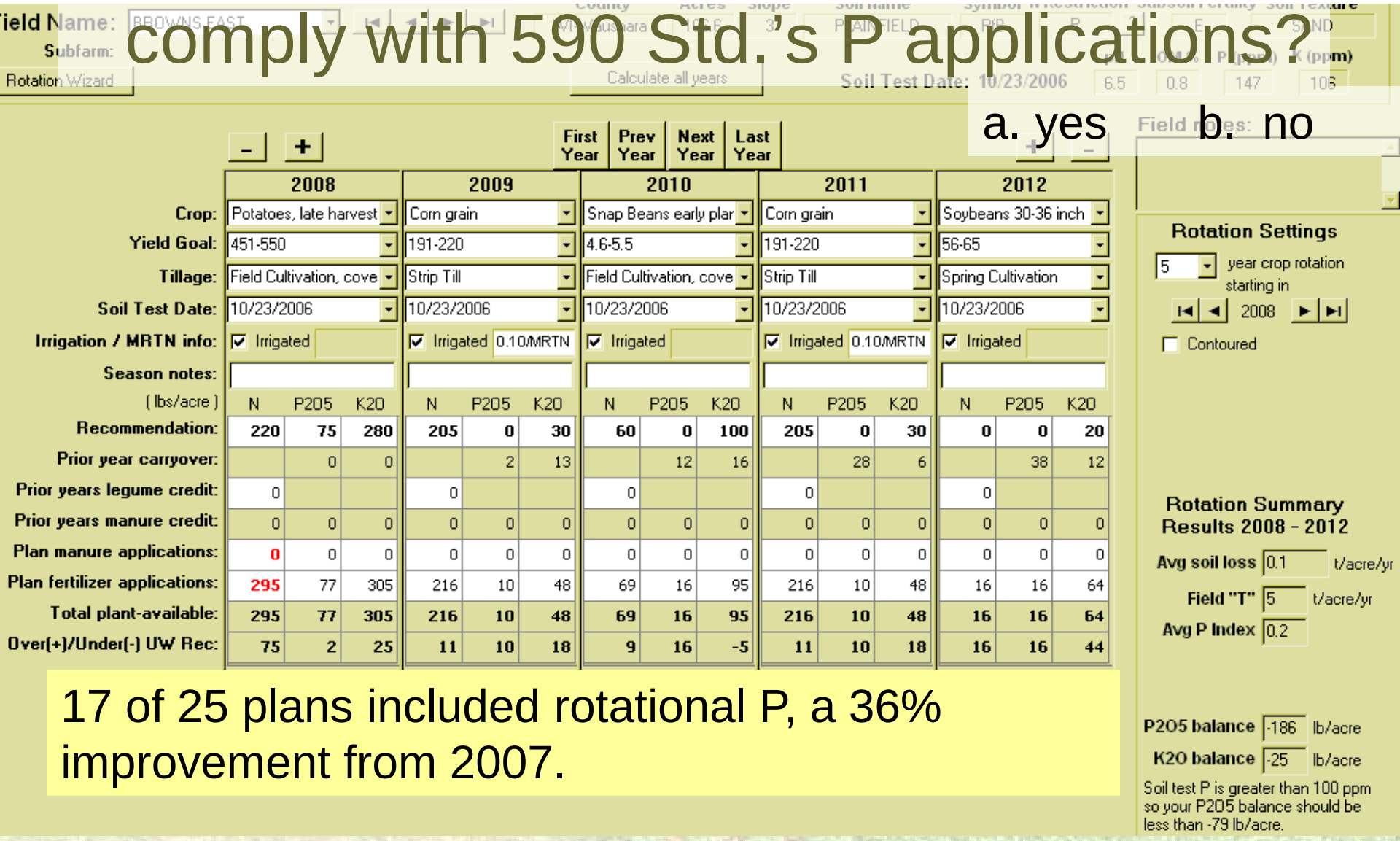
4. Which field is mostly farmed on the contour?

a. 3 b. 10 c. 14



5. With only fertilizer and no manure applied to this field, does this field comply with 590 Std.'s P applications?

a. yes b. no



Field Name: BROWNS EAST
Subfarm:
Rotation Wizard
Calculate all years
Soil Test Date: 10/23/2006
6.5 0.8 147 108
Field notes:
First Year | Prev Year | Next Year | Last Year

	2008	2009	2010	2011	2012
Crop:	Potatoes, late harvest	Corn grain	Snap Beans early plar	Corn grain	Soybeans 30-36 inch
Yield Goal:	451-550	191-220	4.6-5.5	191-220	56-65
Tillage:	Field Cultivation, cove	Strip Till	Field Cultivation, cove	Strip Till	Spring Cultivation
Soil Test Date:	10/23/2006	10/23/2006	10/23/2006	10/23/2006	10/23/2006
Irrigation / MRTN info:	Irrigated	Irrigated 0.10/MRTN	Irrigated	Irrigated 0.10/MRTN	Irrigated
Season notes:					

(lbs/acre)	2008 N	2008 P2O5	2008 K2O	2009 N	2009 P2O5	2009 K2O	2010 N	2010 P2O5	2010 K2O	2011 N	2011 P2O5	2011 K2O	2012 N	2012 P2O5	2012 K2O
Recommendation:	220	75	280	205	0	30	60	0	100	205	0	30	0	0	20
Prior year carryover:		0	0		2	13		12	16		28	6		38	12
Prior years legume credit:	0			0			0			0			0		
Prior years manure credit:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan manure applications:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan fertilizer applications:	295	77	305	216	10	48	69	16	95	216	10	48	16	16	64
Total plant-available:	295	77	305	216	10	48	69	16	95	216	10	48	16	16	64
Over(+)/Under(-) UW Rec:	75	2	25	11	10	18	9	16	-5	11	10	18	16	16	44

Rotation Settings
5 year crop rotation starting in 2008
Contoured

Rotation Summary Results 2008 - 2012
Avg soil loss 0.1 t/acre/yr
Field "T" 5 t/acre/yr
Avg P Index 0.2

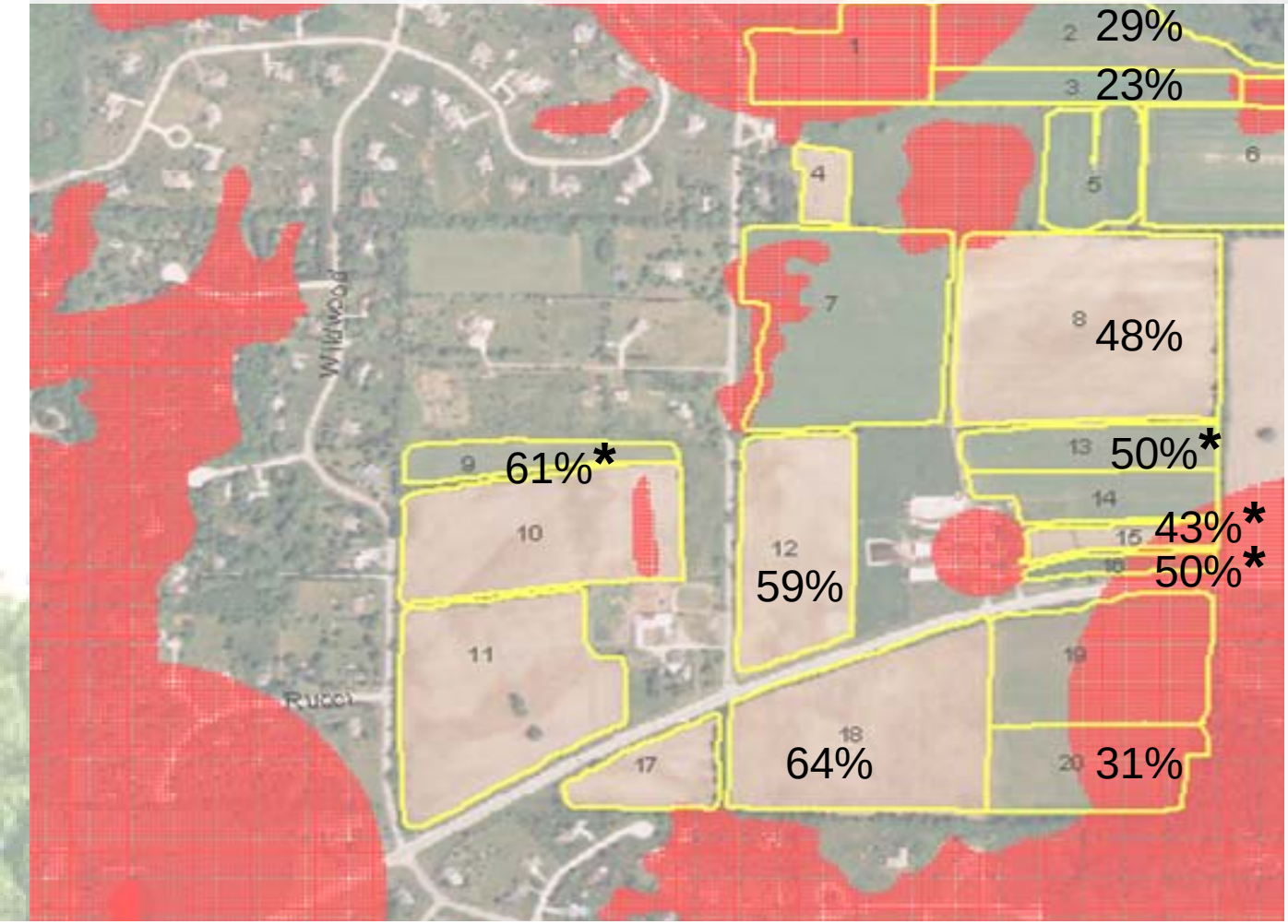
P2O5 balance -186 lb/acre
K2O balance -25 lb/acre
Soil test P is greater than 100 ppm so your P2O5 balance should be less than -79 lb/acre.

17 of 25 plans included rotational P, a 36% improvement from 2007.

Meeting P Recommendations

- Corn has 10 lbs.P2O5/ac excess
  - A2809 p.41 "For soils testing excessively high the application rate is zero, with the exception of potato and corn which may respond to an application of 20-30 lb/ac each of P2O5 and K2O as starter fertilizer."
- Snap bean, soybean exceed P2O5 recommendations by 32 lbs. P2O5/ac over the 5 year crop rotation from 2008-2012.

Meeting P Recommendations



- 2003 & 2008 soil tests
- 13 of 24 fields increased soil test P levels by an average of 47% to over 50 PPM P
- 4 of these 13 fields over 100 PPM P in 2003, increased an average 51%

*** % Increase soil test P to > 100 PPM P in 5 yrs**

% Increase soil test P to > 50 PPM P in 5 yrs

Tracking Implementation

A NM plan review with 2003 and 2008 soil tests

- Partial list of applications since 2004
  – Need real nutrient application log
    1st year in Snap Plus for this plan
- 2 of 24 fields plainly show not meeting T
  – Plan for T
- Liquid winter applications of 19,500 gal/ac on restricted fields exceed 7,000 gallons/ac winter allowable rate
- Solid winter applications exceeded the P removal of next year's crop by 10 lbs P2O5/ac
  – Tie NM plan to maps and meet 590 for winter applications

Meeting N Recommendations

15 of 25 plans met N recommendations on every field, a 14% decline from 2007.

Field Name: BROWNS EAST

County	Acres	Slope	Soil Name	Symbol	N Restriction
WI-Waushara	106.6	3	PLAINFIELD	PfB	P

Soil Test Date: 10/23/2006 pH 6.5

	2008	2009	2010	2011	2012
Crop:	Potatoes, late harvest	Corn grain	Snap Beans early plar	Corn grain	Soybeans 30-36 inch
Yield Goal:	451-550	191-220	4.6-5.5	191-220	56-65
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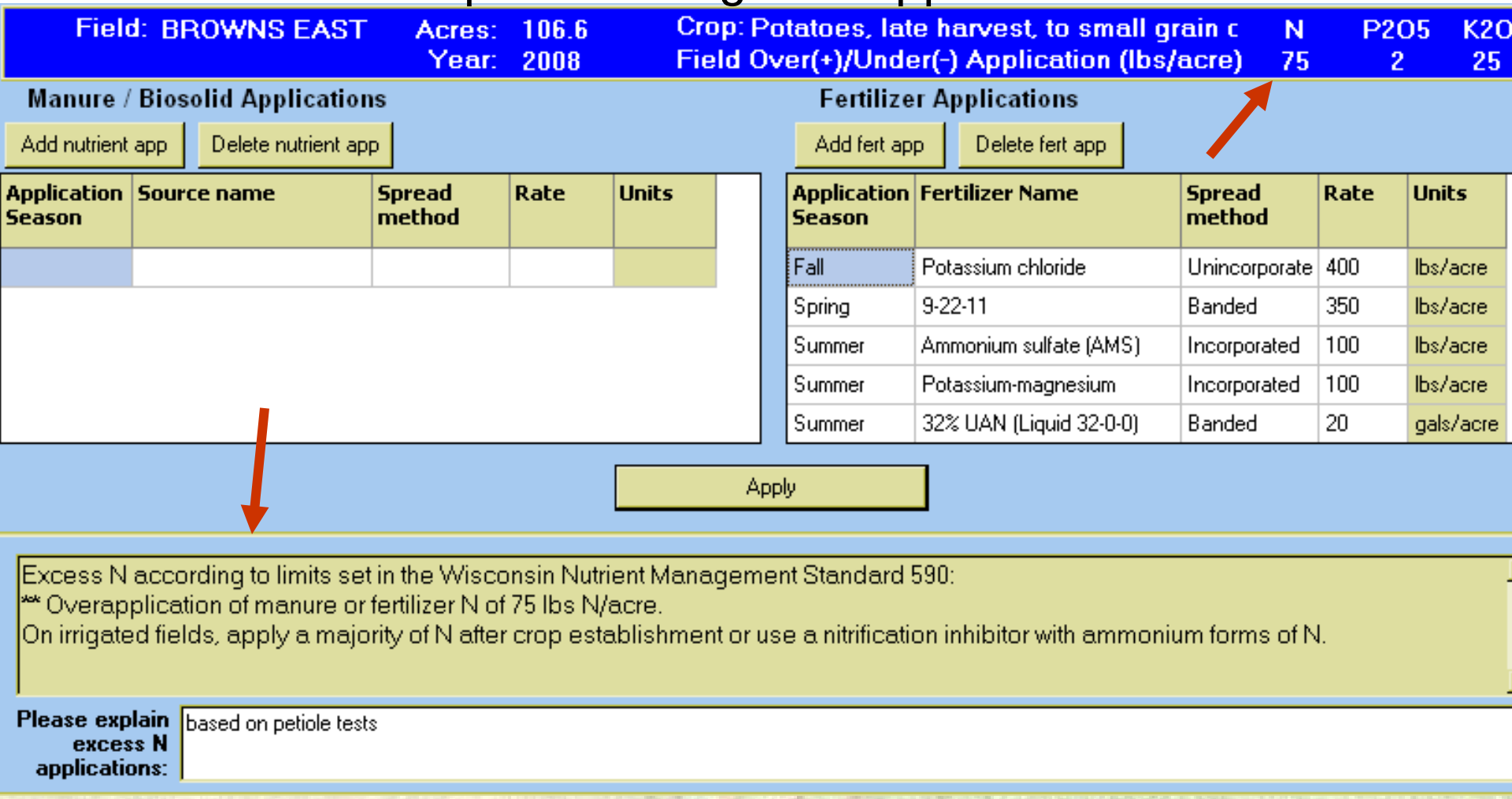
Soil Test Date:	10/23/2006	10/23/2006	10/23/2006	10/23/2006	10/23/2006
Irrigation / MRTN info:	Irrigated	Irrigated 0.10/MRTN	Irrigated	Irrigated 0.10/MRTN	Irrigated
Season notes:					

(lbs/acre)	N	P205	K20	N	P205	K20	N	P205	K20	N	P205	K20	N	P205	K20
Recommendation:	220	75	280	205	0	30	60	0	100	205	0	30	0	0	20
Prior year carryover:		0	0		2	13		12	16		28	6		38	12
Prior years legume credit:	0			0			0			0			0		
Prior years manure credit:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan manure applications:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plan fertilizer applications:	295	77	305	216	10	48	69	16	95	216	10	48	16	16	64
Total plant-available:	295	77	305	216	10	48	69	16	95	216	10	48	16	16	64
Over(+)/Under(-) UW Rec:	75	2	25	11	10	18	9	16	-5	11	10	18	16	16	44
Annual Total PI	0.3			0.2			0.2			0.2			0.2		

Details

Meeting N Recommendations

- Are higher applications of N being used to compensate for less than optimal timing of N applications?



Field: BROWNS EAST Acres: 106.6 Year: 2008 Crop: Potatoes, late harvest, to small grain c Field Over(+)/Under(-) Application (lbs/acre) N 75 P2O5 2 K2O 25

Manure / Biosolid Applications

Add nutrient app | Delete nutrient app

Application Season	Source name	Spread method	Rate	Units

Fertilizer Applications

Add fert app | Delete fert app

Application Season	Fertilizer Name	Spread method	Rate	Units
Fall	Potassium chloride	Unincorporate	400	lbs/acre
Spring	9-22-11	Banded	350	lbs/acre
Summer	Ammonium sulfate (AMS)	Incorporated	100	lbs/acre
Summer	Potassium-magnesium	Incorporated	100	lbs/acre
Summer	32% UAN (Liquid 32-0-0)	Banded	20	gals/acre

Apply

Excess N according to limits set in the Wisconsin Nutrient Management Standard 590:
** Overapplication of manure or fertilizer N of 75 lbs N/acre.
On irrigated fields, apply a majority of N after crop establishment or use a nitrification inhibitor with ammonium forms of N.

Please explain excess N applications: based on petiole tests

Meeting N Recommendations

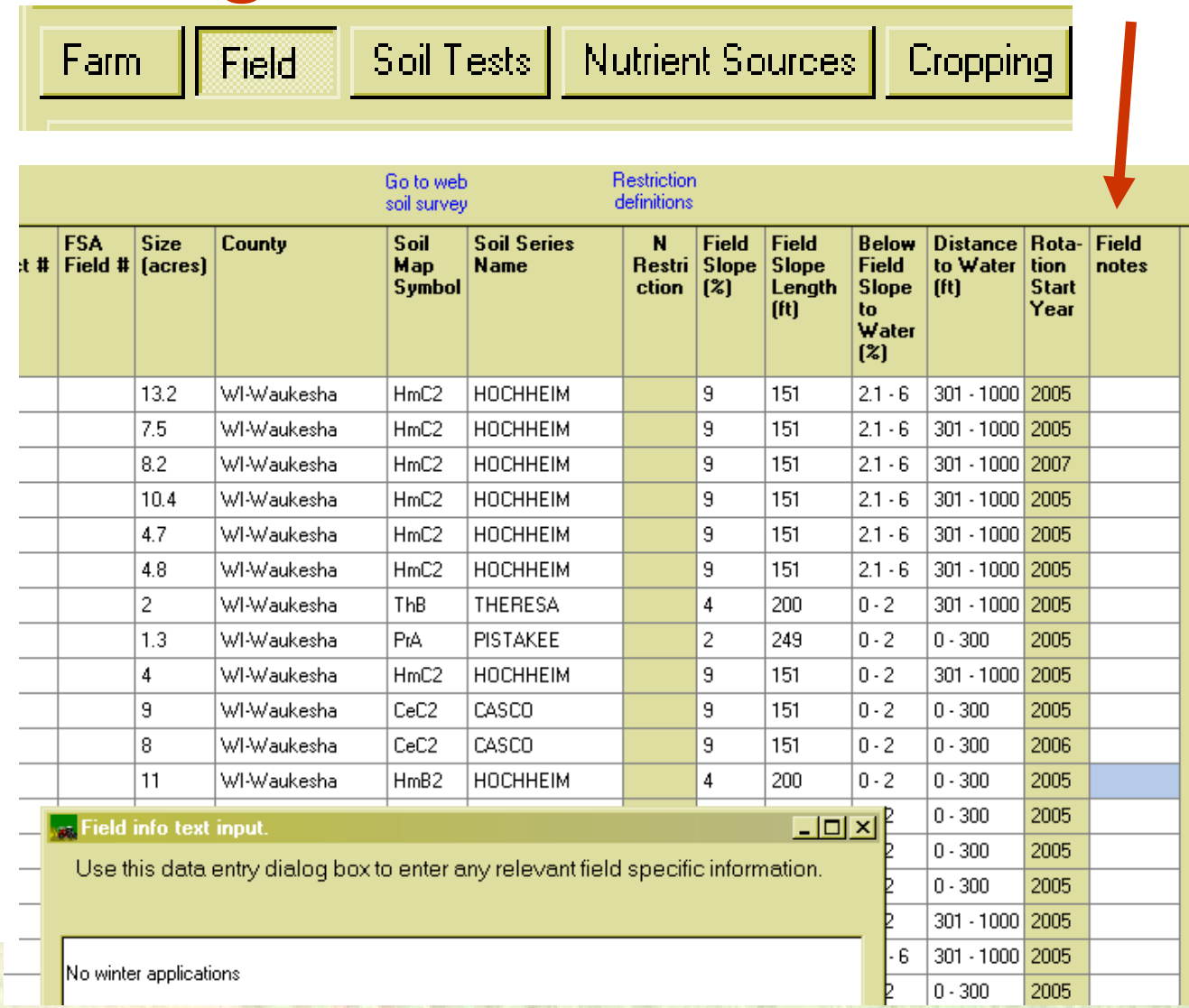
snap bean, corn, potato, corn, soybean rotation

- Plan narrative - *"All of the crops follow UW recommendation except for the N recommendation for potatoes. The rates used for potatoes are higher than UW recommendations. The increase in N is supported by a history of petiole sampling. Each year the samples show a deficiency in N even at the current over application rates."*
  Are N applications based on past experience from other growing seasons?
- A2809 says *"Potato N rates include N in starter fertilizer. Reduce N rate by 25% if petiole nitrate test is used to guide in-season N applications."* In most cases, less N is used with small amounts provided more often to reduce N losses and the A2809 N recommendations are not exceeded.

Spreading Restrictions

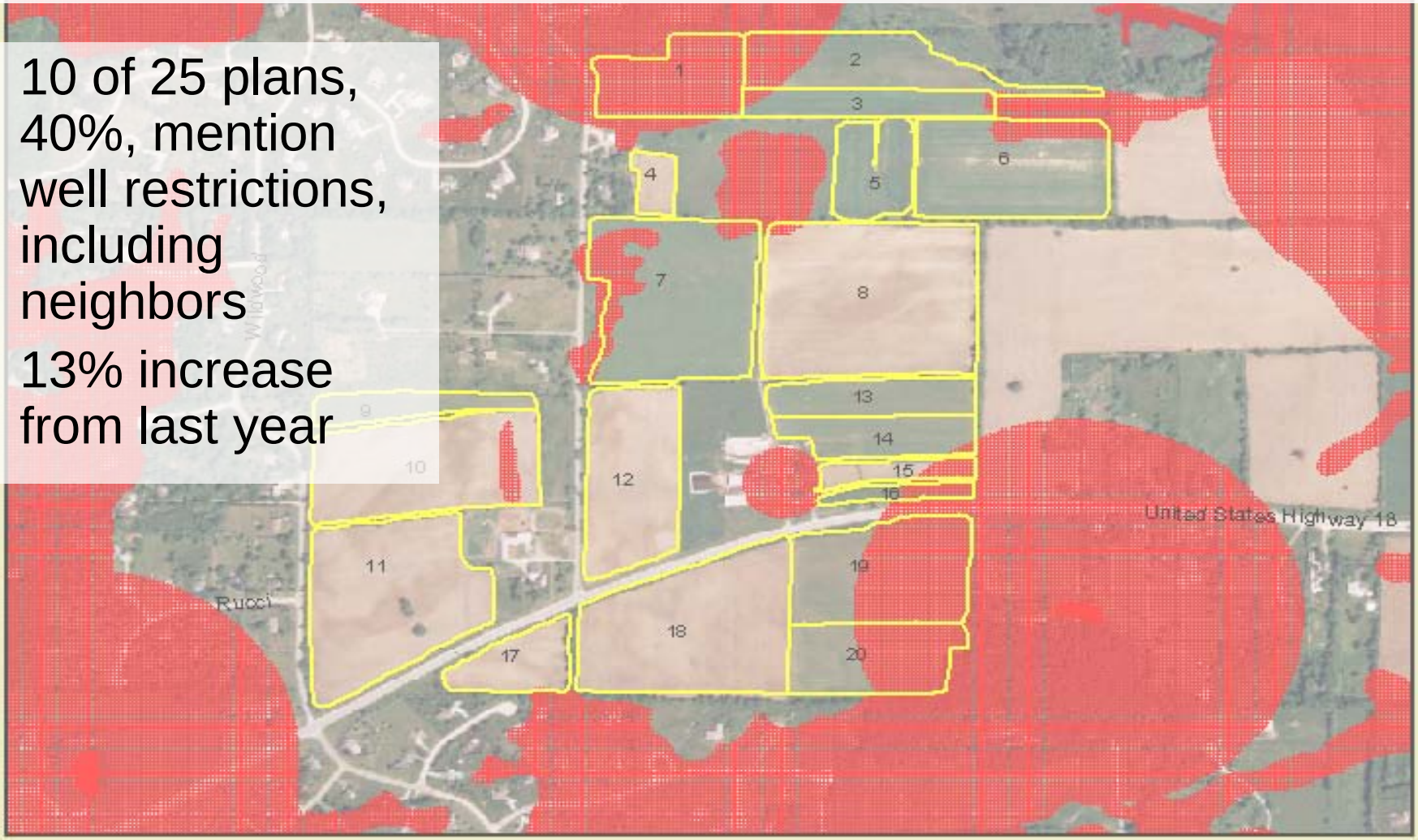
Place reminders of spreading restrictions in the *Field screen notes.*

This will show up on the Snap Plus *Cropping Screen* and in the *NM Plan Sorted by Crop Report* to help follow 590.



Well Spreading Restrictions

- 10 of 25 plans, 40%, mention well restrictions, including neighbors
- 13% increase from last year



Fall N Restrictions

No Winter Application (slope > 12%)

Winter Restrictions (if slope > 9%)

SWQMA
(No Winter Application,
Other Non-Winter Restrictions)

Perennial Streams

Intermittent Streams

PLSS Sections

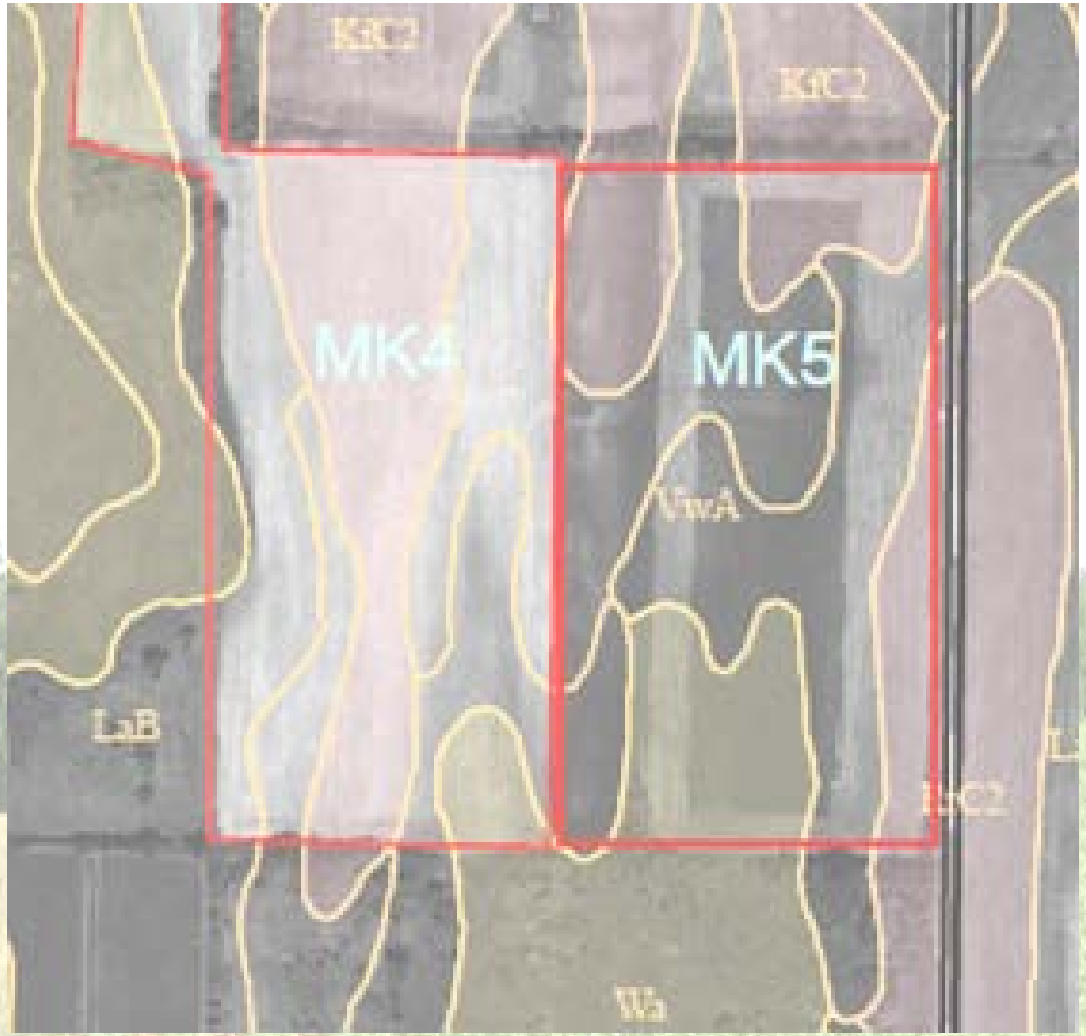
N

0 750 1,500
Feet

Sources:
USDA-NRCS SSURGO
2005 NAIP imagery
WI-DNR 24k Hydro
WI DOT Roads

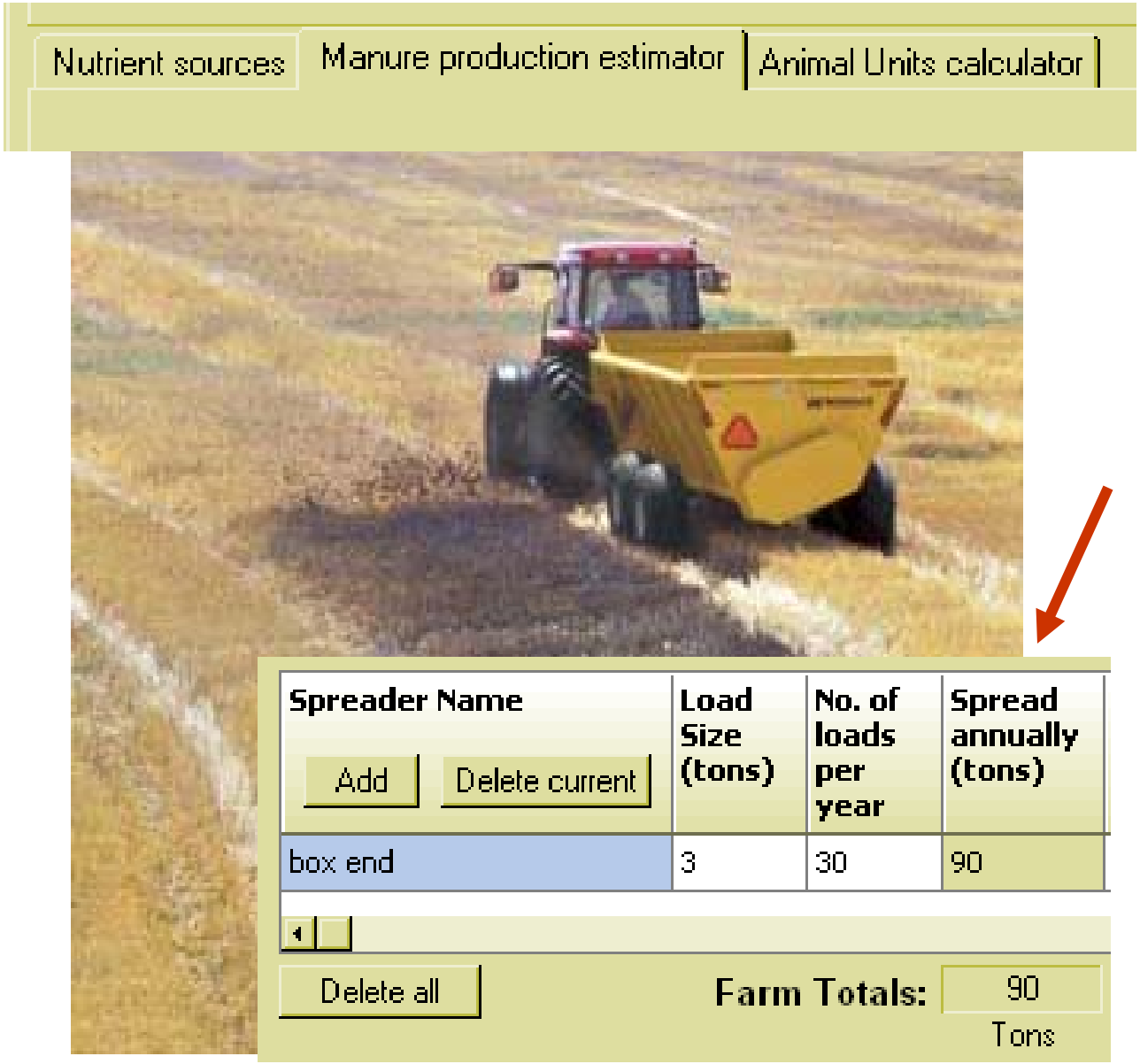
- Incorporate spreading restrictions into the plan.
- Account for all the manure on all farms in the operations.
- Amend rotations and applications with what really was done.

http://mmas-mapping.soils.wisc.edu/



Spreader Calibration

- 9 plans, 36%, calibrated manure applications to account for speed and manure.
- Snap Plus now includes a place for spreader calibration.



NM Plan Review Summary

- Dominant critical soil is the most erosive soil that covers 10% or more of the field.
- T and P management is for the whole rotation. Update plans with apps, rotations, and tillage that are used and meet T.
- N applications need to meet 590 and UW recs.
- Spreading restrictions from maps need to be part of the plan.
- Know what's applied calibrate spreaders and update plan.

When Are Producers Required to Have a Nutrient Management Plan?

- When offered [70%] **cost-share for NM**
- When accepting **manure storage cost-share**
- When participating in **farmland preservation** program
- When regulated under a **county ordinance** for manure storage or livestock siting
- When regulated under a DNR **WPDES** permit
- Are required to prevent or **mitigate imminent harm** to waters of the state as an emergency or interim response to a grossly negligent pollution discharge