Midwest Soil Improvement Symposium:

Research and Practical Insights into Using Gypsum

Applying Gypsum: When, How and How Much

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APPLYING GYPSUM: HOW, WHEN AND HOW MUCH

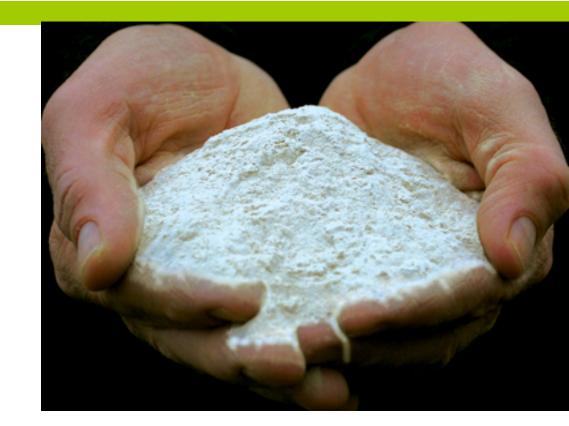
Ron Chamberlain, GYPSOIL™ Division of Beneficial Reuse Management

Topics

- Physical properties
- □ Storage
- Loading
- □ Spreading
- □ Timing
- Rates



- Unlike any other
 bulk-applied
 material
- Requires learning process
 - Once you figure it out, it's not difficult



Gypsum Characteristics

- Physical properties vary, depending on source
- □ FGD gypsum
 - Fine tan-colored powder, damp to the touch
 - Similar to slightly damp flour
- □ Gypsum from manufacturing
 - White to grey powder with somewhat larger crystalline structure
- Tendency to bridge

Storing Gypsum



 Ideal: Under cover
 Can be stored in open on turn-row, or farm lot

Storing Gypsum in Open

- $\square > 200$ ft. from nearest stream or drainage
- Scrape ground bare (remove stalks, grass & debris)
- □ Pile to a peak
 - If rain, surface will seal and water will run off
- Pile so water drains away from bottom of pile
- As with all farming materials, keep away from livestock, pets, children

🗆 Ideal:

- Stainless steel box with steep (45° angle) sides
- Belt at least 20" wide
- Twin spinners
- Independent belt and spinner controls
- Remove non-essential interior gates, partitions, braces

New Leader 3020 with G4 control unit





Chandler littler & lime spreader

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BBI Litter spreader



Spreader Box

- Requires steep, slick sides
 Clean and coat rusted areas
 If not stainless, use plastic
 - liner
- Treat with SLIP-Plate graphite film coating





Spreader Set Up



- Raise rear gate no more than 3"-5"
- Adjust spinners for best pattern
 - Move further from drop
 - Reduces tendency for heavier pattern on edges

Loading

- Place gypsum on sides, not center
- Feather out on bed
 rather than dropping
 all in one pile
- Do not pile heavily against rear gate



Calibrating Spreader

- 15
- Load spreader about 1/3 full
- □ Apply to field
- □ Check:
 - Rate
 - Flow
 - Pattern
- Adjust belt and spinners controls as needed
- □ Increase the load size until you are comfortable



Timing



 Apply GYPSOIL any time that it is
 appropriate to be in the field without
 damaging the soil or the crop

Ideal Application Periods

- 17
- After any alfalfa cutting once hay is bailed
- □ After wheat harvest
- □ After soybean or corn harvest
- Before planting

Avoid applying on snow-covered ground to minimize wind or water loss.

Incorporation?

- 18
- □ Gypsum is soluble; there is no need to incorporate
- But there's no harm in applying prior to tillage either
- □ GYPSOIL is flexible!

Rates

- Experience is best teacher
- Depends on objectives, circumstances
- Typical rates
 - For sulfur fertilization of alfalfa
 - 300-500 lbs/acre
 - For amending soil
 - 1 to 2 ton/acre every 1 to 2 years
 - Established use rates for peanuts, potatoes, other specialty crops

Soil Test CEC is Guide

Т	ORGANIC MATTER		PHOSPHORUS						POTASSIUM		MAGNESIUM		CALCIUM		SODIUM		рН			CATION	PERCENT BASE SATURATION (COMPUTE					
				P1	1 P2		BICARBONATE P		К		Mg		Ca		Na		SOIL	BU	FER	EXCHANGE CAPACITY	% K		% Mg	% Ca	% H	
	NOD FED L.O.I		WEAKERAY 17		STRONG BRAY 1/7		4	OLSEN										4	DEX	C.E.C.			-			
F	ERCENT	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	13			meq/100g						
Т	2.4		12		22				128		190		1344				6.3		6.9	9.6	3.4		16.5	70.0	10.1	
L	2.4		24		37				101		195		1620				5.8		6.7	12.3	1		13.2	65.9	18.8	
																					1					

<u>CEC</u>	<u>Rate</u>
<10	0.5 T/A
10-15	1.0 T/A
>15	2.0 T/A

Goal: Base saturation of Ca = 70% to 85%

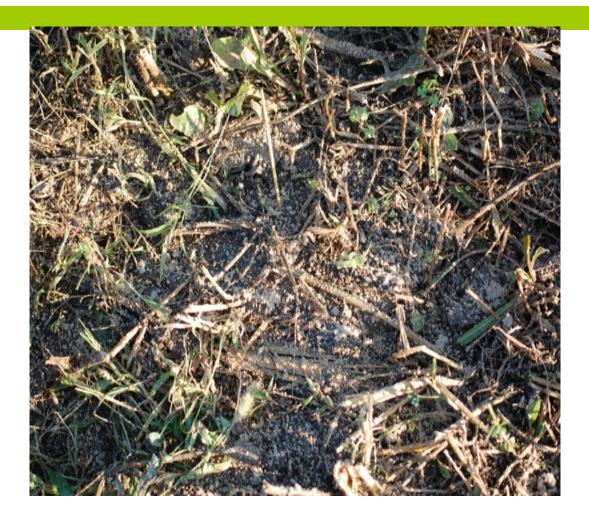
Typical Cost

Typical applied cost: \$25-\$45/Ton

Transportation cost is main variable

Price set at retail

Mined gypsum generally much higher cost



GYPSOILS's Expanding Distribution System

□ Ilinois

•	Heartland Ag Group, Ltd	Hintzsche Fertilizer, Inc.						
•	Midwest AgSolutions, LLC	Southern FS						
•	Tri-County Chemical, Inc	Van Horn Inc						
•	Wabash Valley FS	Ag Spectrum Company/Ag Solutions Group						
•	Dahm Companies Jackson	AgVenture Seeds						
Ind	iana							
•	AgLime Trucking	Brookfield Sand and Gravel						
•	Clouser Crop Solutions	Co-Alliance Mulberry						
•	CPS Straughn	DeHaven Soil Service						
•	Fischer Spraying Service	Kentuckiana Trucking, Inc						
•	Premier Ag	Steve Meyer Trucking Inc.						
•	Superior Ag	A E Reality Group						
	Ag Plus	Flat Rock Fertilizer						
	Jackson Jennings Coop	Kova Fertilizer						
	Monticello Farm Services	New Ross Grain						
•	Motes Farm Services	Premier Ag						
•	Sudan Farms	Vision Ag						
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Wilson Fertilizer
 Brad Brown

□ Wisconsin

•	Ag Ventures	Agri Partners
•	Common Sense Soil Systems LLC	Conserv FS
•	Cooperative Plus, Inc.	Country Visions Cooperative
•	Forever Sandfill	Frontier FS Cooperative
•	Kettle Lakes Coop	Krutza Spreading, LLC
•	Kutz Farms LLC	Landmark Services Cooperative
•	Servco FS Cooperative	Short Lane Ag
•	Weninger Asphalt Paving	DeLong Cooperative
•	Glen Schneider	Larson Cooperative
•	Heartland Co-op	Wi River Co-op
•	Lyle Hundertmark	Midwest Ag Solutions LLC

Summary

- □ Applying gypsum is not difficult, just new for many
- □ Like any ag material, store properly
- Use the right equipment; avoid rusted or painted boxes
- □ Set up, calibrate, practice with partial loads
- Apply any time it's appropriate to be in the field
- Match the rate to your objectives and need



Questions?