

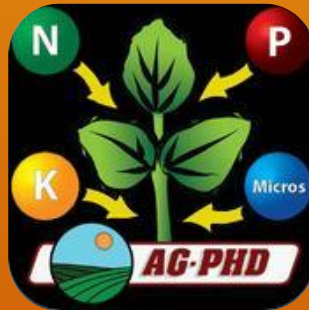
Industry Tools and Training Opportunities

Amy Millmier Schmidt

Departments of Biological Systems Engineering and Animal Science

Overview

- UNL Manure Management Tools
- UNL Training Opportunities
- Mobile Applications
- Other Resources



UNL Manure Management Tools

Nebraska P-Index Software

- Spreadsheet tool used for:
 - assessment of the risk of P loss from agricultural land to surface waters
 - land management planning
 - evaluation of management practices
 - education of factors contributing to P loss
 - regulation of P application to agricultural land

The image shows the cover of a document titled "The Nebraska Phosphorus Index (2012): Background And Users Guide". The cover features the University of Nebraska-Lincoln Extension logo at the top right, with the text "Know how. Know now." and "EC195 (Revised August 2012)". The authors listed are Charles S. Wörtmann, Charles A. Shapiro, Leslie J. Johnson, and Renee F. Hancock. A summary box states: "This publication provides the basis and procedure for using a phosphorus (P) index to assess risk of P delivery from agricultural land to surface waters. The P index is intended for planning as well as regulatory and educational purposes." Two paragraphs of text describe the index's purpose and the factors it considers. A table titled "Table 1. Source and transport factors that contribute to potential P loss from agricultural lands to surface waters." lists site and management factors (Soil P level, P application practices, field management practices) and transport factors (Runoff volume, erosion, distance from P source). A footnote mentions other possible transport factors like surface and sub-surface drainage. The bottom of the cover includes the Nebraska-Lincoln Extension logo and contact information.

UNIVERSITY OF NEBRASKA LINCOLN EXTENSION
Know how. Know now.
EC195
(Revised August 2012)

The Nebraska Phosphorus Index (2012): Background And Users Guide

Charles S. Wörtmann, Extension Soils Specialist
Charles A. Shapiro, Extension Soils Specialist
Leslie J. Johnson, Animal Manure Management Program Coordinator
Renee F. Hancock, Water Quality Specialist, Natural Resources Conservation Service

This publication provides the basis and procedure for using a phosphorus (P) index to assess risk of P delivery from agricultural land to surface waters. The P index is intended for planning as well as regulatory and educational purposes.

Phosphorus is an essential nutrient for the growth of both crops and aquatic vegetation. Phosphorus, either in inorganic form such as with fertilizer or in organic form as with animal manures, often needs to be applied to the land for optimal crop growth. An important byproduct of animal feeding is manure that contains P. Land application of manure can be beneficial to crop production but can result in increased risk of P loss to surface waters. Fortunately, P is easily managed compared with nitrogen which can be easily lost to the environment through several pathways including leaching, volatilization, denitrification, emission of nitrous oxide, and runoff and erosion, while P loss to the environment is through transport by runoff and erosion with generally negligible losses through sub-surface drainage.

Phosphorus indexes are tools for the assessment of the potential for P delivery from agricultural lands to surface waters. Therefore, operators of large concentrated animal feeding operations (CAFOs) in Nebraska need to assess the risk of P delivery to surface waters from each field before manure can be applied by using a P index. This assessment needs to be done once every five years. The Nebraska P Index (2012) is a tool for risk assessment, land management planning, education of factors contributing to P loss, and regulation of P application to agricultural land. The Nebraska P Index was developed using the Iowa P Index as a base (Iowa NRCS, 2004) with adaptation to Nebraska conditions and with revisions in consideration of current information.


Table 1. Source and transport factors that contribute to potential P loss from agricultural lands to surface waters.

Site and management factors	Transport factors ¹
Soil P level	Runoff volume
P application practices including time, rate, and method of application	Erosion from rainfall and snowmelt, and from irrigation
Field management practices such as tillage practices and use of cover crops	Distance from P source to concentrated water flow or a water body


¹Other possible transport factors that are not considered in the Nebraska P index (2012) include surface and sub-surface drainage, percolation and underground movement of P to seepage areas, and atmospheric deposition that may be associated with wind erosion. These are relatively minor transport factors, as compared to runoff volume and water erosion, for P delivery from fields to surface waters in Nebraska.

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Nebraska Manure Value Calculator



Calculating the Value of Manure for Crop Production



This worksheet is part of NebGuide G1519, *Calculating the Value of Manure for Crop Production*.

Field Information				Date:			
Field:				Air Temperature (°F):			
Next Crop:				Manure Source:			
Is the soil sandy?				Manure Type:			
Soil Test P:	ppm P ₂ O ₅			Incorporation time:			
Type of P Analysis:							
Soil Test K:	ppm			Nitrogen			
Soil Test S:	ppm			Ammonium N	Organic N	Total N	P ₂ O ₅
Soil Test Zn:	ppm						K ₂ O
							Sulfur
							Zinc

Nutrient Plan										
				Ammonium N	Organic N	Total N	P ₂ O ₅	K ₂ O	Sulfur	Zinc
1. Manure nutrient content from manure test report (lbs/ton, lbs/1000 gal, or lbs/acre-inch).										
2. Nutrient availability factors. See Tables 1 and 2 for nitrogen availability.				#N/A	#N/A		1	1	1	1
3. Available nutrients (lbs/ton, lbs/1000 gal, or lbs/acre-inch).				#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0
4. Nutrient recommendations for the next crop (lbs/acre/year).										
5a. Manure application rate to meet crop nitrogen rate (tons/acre, 1000 gal/acre, or acre-inches).						#N/A				
5b. Actual manure application rate (tons/acre, 1000 gal/acre, or acre-inches).										
6. Total nutrients available (lbs/acre).						#N/A	0	0	0	0
7. Nutrient need for four years (except N) (lbs/acre).							0	0	0	0

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Manure Nutrient and Land Requirement Estimator

Steps:



Step 2. Enter farm specific information to estimate manure excretion:

Beef	<u>Animals - Head Capacity</u>
Dairy	Beef, Feeder Cattle - 2500
Horse	Swine-Finishing Pigs - 1000
Poultry - Egg	
Poultry - Meat	
Swine	

Step 3. Review estimate of manure excretion:

Beef Manure	<u>Excreted Manure</u>
Dairy Manure	306000 lbs. N/year
Horse Manure	40000 lbs. P/year
Poultry - Egg Manure	
Poultry - Meat Manure	
Swine Manure	

Step 4. Estimate N & P retained by storage and land application:

After Losses
<u>Crop Available Nutrients</u>
84000 lbs. N/year
40000 lbs. P/year

Step 5. Estimate land required for:

Manure
<u>Land Need for Utilizing Nutrients</u>
522 acres to utilize manure N
1822 acres to utilize manure P
Runoff from Open Lot
45 acres to utilize runoff N
80 acres to utilize runoff P
Lagoon Sludge

Manure Use Plan for Nebraska

Intro Conta Info Field Info Manu Analysis Appl Option Crop Plan N Balance P Balance Action Plan % Used NRCS

Potential Fields Used for Manure Application

	Field Name	Soil Texture	Field Size (acres)	1st Year Planner Is Used for This Field
Example	Home 60	Medium	80	2002
Field # 1	Pivot	Medium	130	2002
Field # 2	Feedlot qtr.-Effluent Irrigated	Medium	30	2002
Field # 3	Feedlot qtr.-No Effluent	Medium	70	2002
Field # 4	Dry Quarter	Medium	140	2002
Field # 5	Pivot Corners	Medium	30	2002
Field # 6	Neighbor's Field	Medium	160	2002
Field # 7				
Field # 8				
Field # 9				
Field # 10				
Field # 11				
Field # 12				
Field # 13				
Field # 14				
Field # 15				
Field # 16				
Field # 17				
Field # 18				

Next Page
Previous Page
Print Fields Summary
Setup Printout

Hint: Press [key] [key] in right to move page up and down

Enter each field name, soil texture, and the first year planner is used for the field. If field is to be managed as two separate units, enter each production unit as a separate field (note Field #2 and #3).

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Odor Footprint Tool

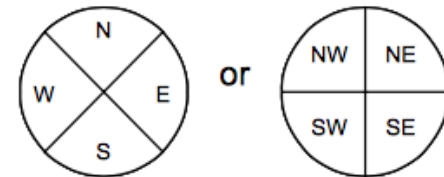
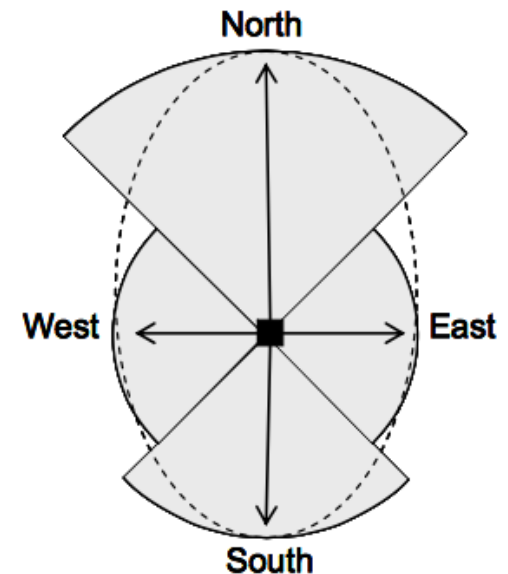
- Designed for siting new operations or assessing odor mitigation practices for an existing operation
- Estimates the frequency of annoying odor events around an existing or proposed livestock facility
- Determines minimum separation distances that should be maintained around the facilities



Odor Footprint Tool

INPUTS

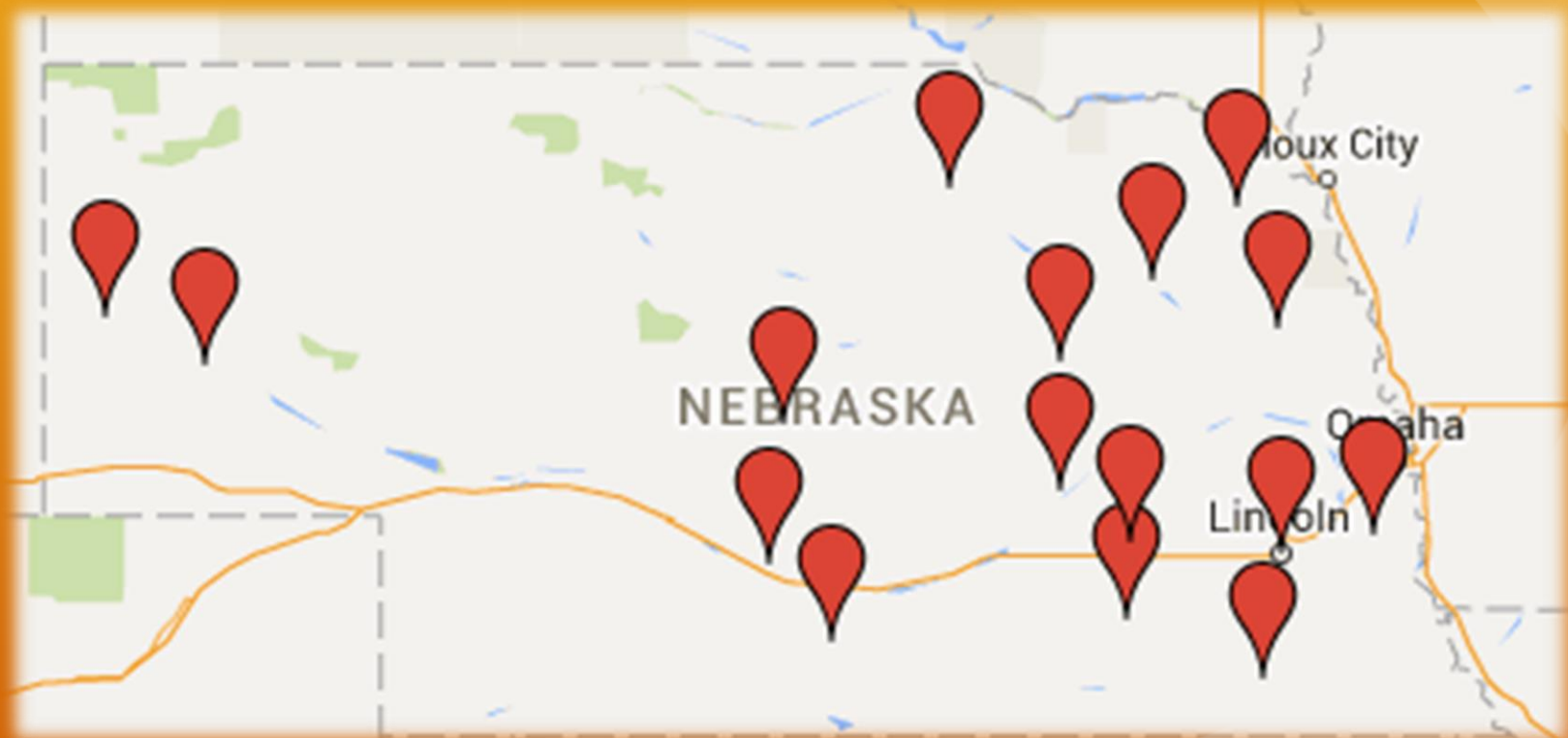
- Facility information
- Location and weather information
- Terrain
- Desired risk-avoidance level
 - Minimum % of hours a location beyond the setback distance should be free from annoying levels of odor
 - 90, 94, 96, 98, or 99%



Directional setback distances outline the expected extent of risk-based odor impact around a livestock odor source.

Manure Spreader Calibration Kits

- Materials for calibrating wet and dry spreaders
- Distributed to Extension offices statewide



Nebraska Extension Publications

Soil Management

EC154	Soil Sampling
G1503	Management
G1516	Choosing the
G1563	Manure Inco:
G1564	Manure Inco: System
G1740	Guidelines fo
G1632	Using a Chlor
NM 1292	Livestock Ma St. U publicat

Field Crops (Nutrient Management for Field Crops)

EC117	Fertilizer Sugges
EC143	Fertilizing Winte
EC155	Nutrient Manage
EC187	Pea Production i
G361	Using Starter Fer
G1459	Sugarbeet Nutrie
G1669	Fertilizer Sugges
G1945	Fertilizing Proso

Manure Nutrient Management

EC179	Managing Livestock Manure to Protect Environmental Quality
EC136	2015 Nutrient Management Record Keeping Calendar - Request a Copy
EC719	Managing Earthen Manure Storage Basins During Drought
EC778	Application of Liquid Animal Manures Using Center Pivot Irrigation Systems
G1450	Sampling Manures for Nutrient Analysis
G1293	Feedlot Abandonment, Recommended Procedures
G1315	Composting Manure and Other Organic Residues
G1370	Abandonment Planning for Earthen Manure Storages, Holding Ponds and Anaerobic Lagoons

Archived Presentations & Webcasts

- Presentations from 2014 Manure Management Field Day
- Land Application Training Webcasts
- LPELC Webinars
- Additional topics...Air quality, feed management, regulations, etc.

Custom Manure Haulers Directory

Custom Manure Haulers in the State of Nebraska

Business Name	Owner/Contact	Address	City, State and Zipcode	Phone	Type of Manure
LG Pumping, LLC	Ray Gubbels	104 North State Street	Osmond, NE 68765	402-748-3356	Liquid
	Scott Loseke	33013 325 Avenue	Platte Center, NE 68653	402-562-1188	
Loseke Custom Hauling	Jared Loseke	32100 122nd Avenue	Columbus, NE 68601	402-562-1188	
Lagoon Pumping and Dredging	Aaron Ross	4015 South 9th Street	Columbus, NE 68601	402-562-1188	
	Jeff Richardson	25739 State Highway 52	Fullerton, NE 68638	308-338-2222	
	Pat Brockhaus	43255 280th Road	Humphrey, NE 68642	402-562-1188	
Loseke Custom Hauling	Jim & Jerry Klassen	42624 430 Avenue	Lindsay, NE 68644	402-562-1188	
	Jarett Doernaman	813 Bryan Street	Clarkson, NE 68629	402-562-1188	
	Jared Loseke	32100 122nd Avenue	Columbus, NE 68601	402-562-1188	
Frickenstein Pumping and Portables	Russ Sayers	1010 Road S	Clarkson, NE 68629	402-562-1188	
	Ted Frickenstein	625 11 Road	West Point, NE 68788	402-338-2222	
	Harry Knobbe	595 15th Road	West Point, NE 68788	402-338-2222	
SG Farm Services Inc	Jeremy Lebrrie			402-338-2222	
	Nick Heetderks	14171 Firth road	Firth, NE 68358	402-562-1188	
McCoy Hauling and Custom Spreading, LLC	Shawn Groszkrueger			712-663-2222	
	Rick Jacobs	1678 3rd Rd	Wisner, NE 68791		
Greenfield Application, LLC	Randy McCoy	1050 Quincy Rd	Ponca, NE 68770	402-663-2222	
	Rick Fullner	4810 34th	Columbus, NE 68601	402-562-1188	
	Chris Knobbe	595 15th Rd	West Point, NE 68788	402-338-2222	
	Kurt Richardson	RR 2 Box 28	Fullerton, NE 68638	308-338-2222	
	Rex Walz	20626 East Auble Road	Stapleton, NE 69163	308-663-2222	
	David Einmann	294 Rd S	Leigh, NE 68643	402-463-2222	
	Pat Nebuda	1966 K Road	West Point, NE 68788	402-338-2222	
	Len Schmale	56323 859 Rd	Carroll, NE 68723	402-562-1188	
	Myron Seier	1658 240th Ave	Albion, NE 68626	402-338-2222	
	Dan Rocheford		Howells, NE 68641	402-263-2222	
Burnham Waste Management	Jordan Liermann	2151 3rd Road	Wisner, NE 68791	402-562-1188	
	Ryan Fisser	27869 SW 89th Rd	Beatrice, NE 68310		
	Barry Burnham	47123 Bean Creek Road	Burwell, NE 68823	308-263-2222	
Steve Rief Custom Manure Hauling	JD Kloth	586 M Rd	Wisner, NE 68791		
	Randall Smith		Scotia, NE		
	Mark Allen	PO Box 274	Lexington, NE 68850	308-338-2222	
	Travis Went	44055 115 Avenue	Leigh, NE 68643	402-763-2222	
	Gene Koehler				
Lux Brothers	Larry Yost	PO Box 803	Sutherland, NE 69165	308-338-2222	
	Frank Carlson	20441 County Road D	Lyman, NE 69352		
	Wade Gibbons	508 3rd Avenue	Minatare, NE 69536		
Steve Rief Custom Manure Hauling	Steve Rief	2275 N Road	Bancroft, NE 68004	402-338-2222	
	Derek Samuelson		Bertrand, NE 68927	308-338-2222	
Lux Brothers	Andy Lux	1282 230th Street	Hubbard, NE 68741	712-338-2222	

[Quick Links](#)

[Contact Us](#)

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[Publications](#)

[Software](#)

[North American Manure Expo](#)

[Find a Custom Manure](#)

[Applicator](#)

The background features several overlapping, semi-transparent shapes in shades of orange and yellow, creating a layered, abstract effect. The shapes are rounded and flow from the top left towards the bottom right.

Events & Training Opportunities

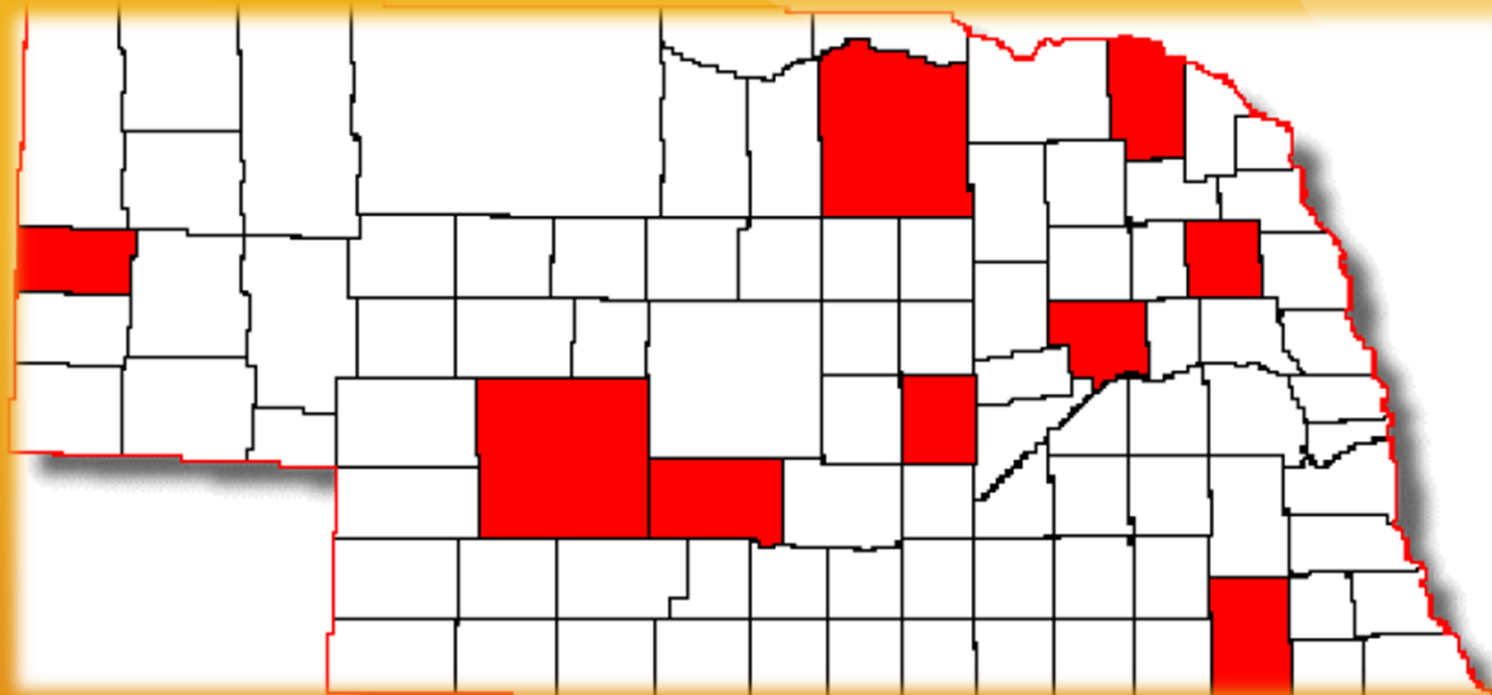
Manure Happens
Take Credit!

UNIVERSITY OF
Nebraska
Lincoln

Land Application Trainings

February 1 - 5, 2016

- NDEQ Permit Requirement
- All-day program(6 hr) for newly permitted farms
- First two hours for renewals



Date (local time)	City
February 1, 2016 at 9:00 am	North Platte
February 2, 2016 at 9:00 am	Atkinson
February 2, 2016 at 9:00 am	Columbus
February 3, 2016 at 9:00 am	Scottsbluff
February 3, 2016 at 9:00 am	Lexington
February 3, 2016 at 9:00 am	West Point
February 3, 2016 at 9:00 am	Beatrice
February 4, 2016 at 9:00 am	Randolph
February 5, 2016 at 9:00 am	St. Paul

Livestock Mortality Composting Demonstration

December 15, 2015, 10:00 a.m.— 2:00 p.m.

Christenson Research & Education Bldg.

UNL Agricultural Research & Development Center



- Compost pile design, operation, and monitoring; “regulations” related to mortality composting
- NRCS Perspectives – Mortality compost in a CNMP; EQIP cost-share opportunities
- Biosecurity considerations
- Lessons learned: ARDC compost site, HPAI carcass disposal, others

RSVP to apatterson6@unl.edu TODAY!





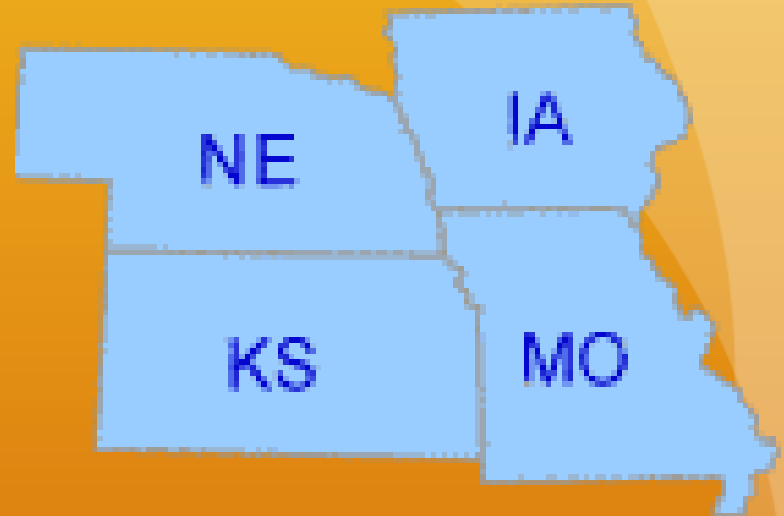
Heartland

Regional Water
Coordination Initiative

Partnership of USDA NIFA
& Land Grant Colleges and Universities

Applying knowledge to improve water quality

- University Extension
- State Regulatory Agencies
- EPA Region 7
- NRCS
- State Technical Service Providers
- Commodity Group Representatives



- Collaborative research
- Shared Extension programs
- Policy discussions

Mobile Apps for Managing Manure

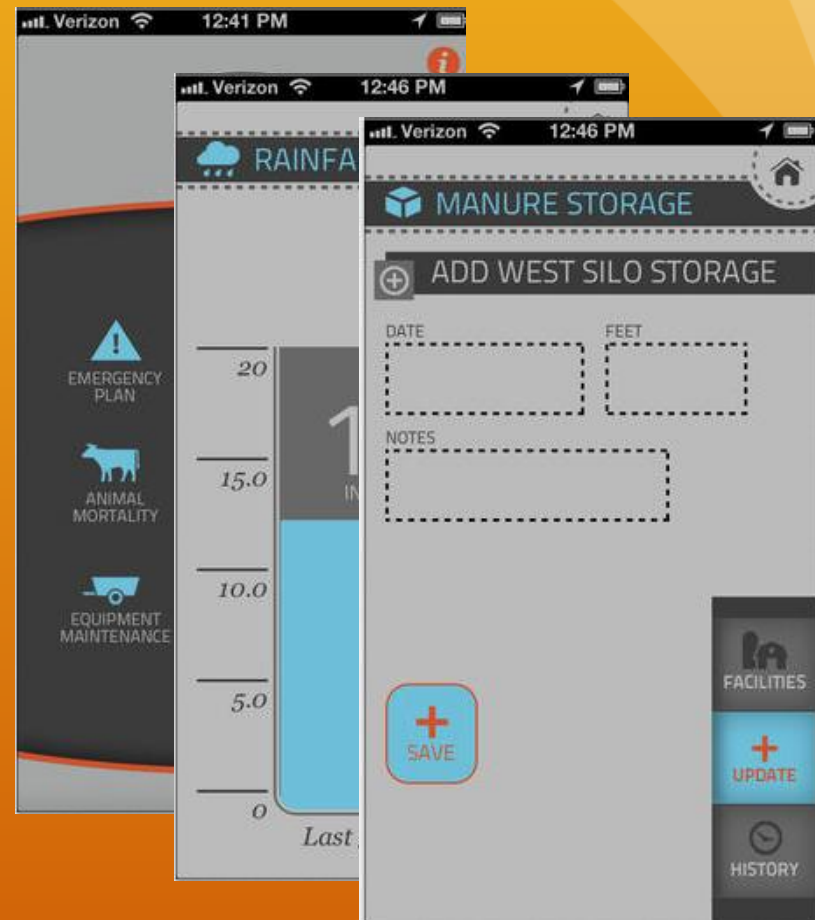
Manure Monitor

Price: \$0.99

Systems: iPhone, iPad, Android



- Keep important records related to environmental stewardship.
- Allows multiple people associated with the same farm to access an emergency response plan.
- Allows for record keeping of rainfall, manure storage capacity, mortality disposal, waterline inspections, and maintenance of manure handling equipment.



Manure Calculator

Price: \$0.99

Systems: iPhone, iPad, Android



- The calculator is designed to do three things:
 - Calibrate manure spreading equipment
 - Determine the amount of nutrients applied in the manure
 - Estimate the economic value of that manure



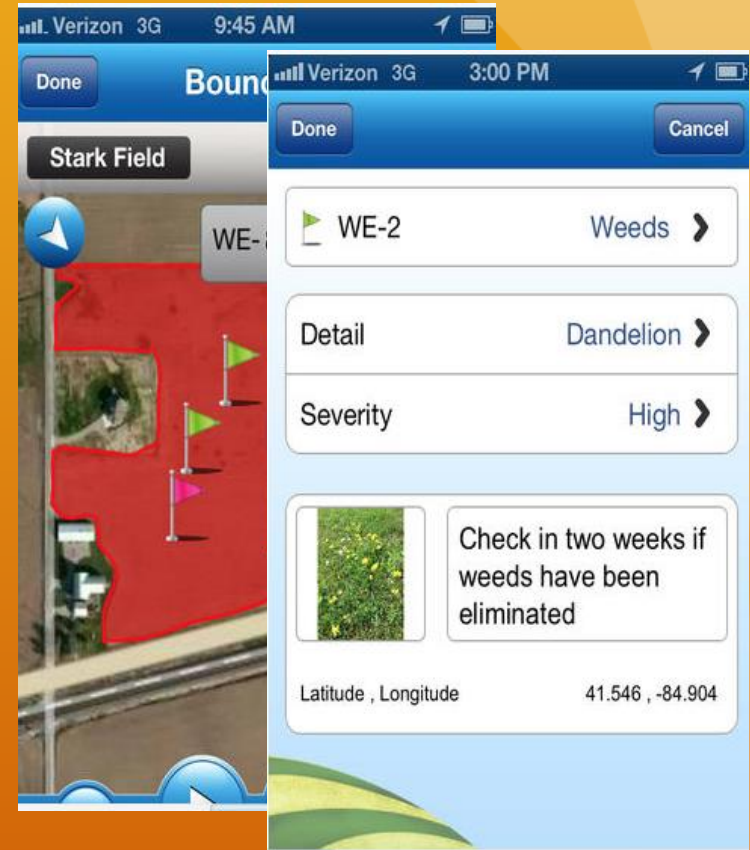
Connected Farm

Price: Free

System: iPhone, iPad, Android



- Map field boundaries, locate irrigation pivots, mark flags, and enter scouting information for points, lines, and polygon areas.
- Scouting attributes include an extensive list of weeds, insects and diseases, and allows you to log the severity of a problem, crop conditions, and more.
- Photos can be captured and integrated with your scouting attributes.



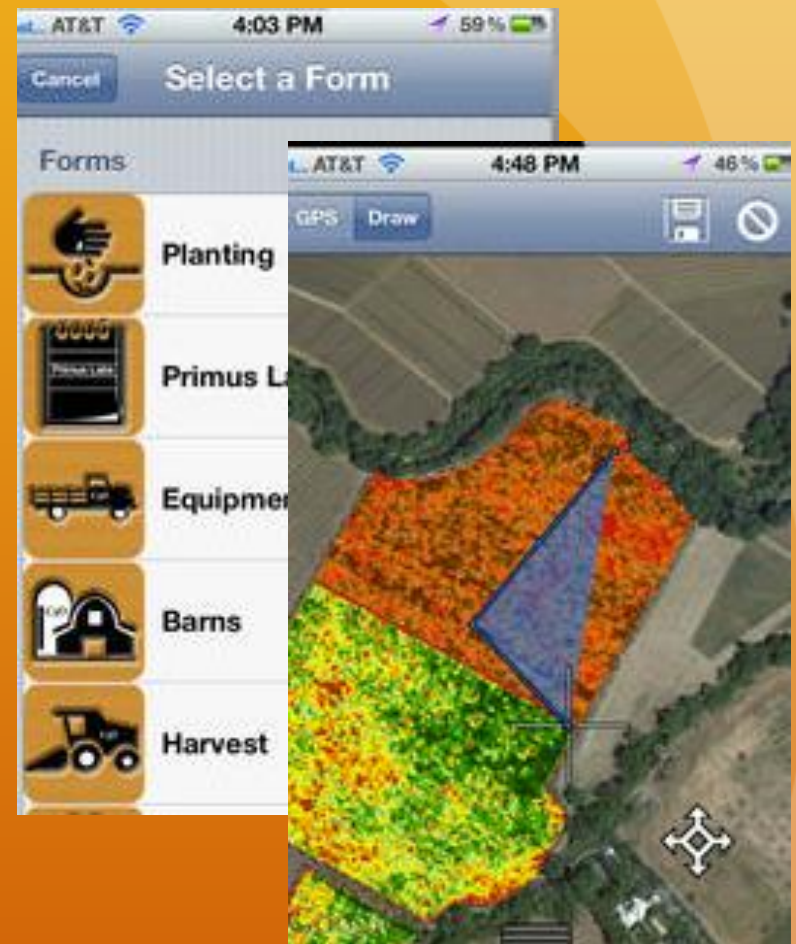
iCrop Talk

Price: Free

Systems iPhone, iPad



- Scouting and sampling (soil, weeds, pest, tissue, yield, etc.)
- Spray reporting
- Irrigation & applications
- Harvest and silo tracking
- GAP/Food safety
- Farm plans with budgets and allocations
- Work orders, time tracking for people and equipment



Soil Web

Price: Free

Systems: iPhone, iPad



- GPS-based, real-time access to USDA-NRCS soil survey data.
- Select GPS Accuracy Threshold.
- App retrieves graphical summaries of soil types associated with the iPhone's current geographic location.
- Sketches of soil profiles are linked to their official soil series description (OSD) page.

A screenshot of the 'SoilWeb for iPhone' app interface. The top status bar shows 'Carrier' and '10:11 PM'. Below the title bar, there is a 'Save' button and a 'GPS Accuracy' slider set to 10. The main content area displays two soil profiles side-by-side. The left profile is for 'Pollasky (40%)' and the right is for 'Montpellier (40%)'. Both are described as 'Typic Xerorthents' and 'Typic Haploxeralfs' respectively. The profiles are shown as vertical columns with horizon labels and depths: Pollasky (A11: 0cm, A12: 8cm, C1: 20cm, C2: 86cm, 99cm) and Montpellier (A1: 0cm, A2: 10cm, BA: 28cm, Bt1: 51cm, Bt2: 86cm, Bt3: 109cm, Bt4: 140cm, 152cm). Below the profiles, text describes the 'Pollasky-Montpellier complex, 9 to 15 percent slopes erosion remnants terraces / Summit'. At the bottom, there is a logo for the Department of Land, Air & Water Resources and the text 'Accuracy: 100 m request complete'.

Manure Valuator

Price: Free

Systems: Android (iPhone coming!)



- Provides a bulk cost calculator to determine cost per pound of N, P, and K from inorganic fertilizers.
- Database consisting of nutritive value of 18 sources of manure allows users to enter custom values for dry and wet manures.

Inorganic Nutrient Prices (\$/lb)

Calculate Fertilizer Cost From Bulk Cost

Nitrogen(N)
0 - 18
Phosphorus(P205)
0 - 2
Potassium(K20)
0 - 2

Soil Test Results

Nitrogen(N)
0 - 200
Phosphorus(P205)
0 - 200
Potassium(K20)
0 - 200

Select 1
Swine, Liquid, < 1% Solids

Nutrient Application Rate Results

	Recommended (lb/ac)	Applied (lb/ac)	Surplus/Deficit (lb/ac)
Nitrogen	25	129.20	104.20
Phosphorus	18	133.00	115.00
Potash	36	122.20	86.20

Manure Value Results

Manure (lb)	Max Potential \$/ton	Application	
		\$/ton	(\$/ac)
Nitrogen	\$27.13	\$5.25	\$10.50
Phosphorus	\$24.61	\$3.33	\$6.66
Potash	\$38.49	\$11.34	\$22.68
Total	\$90.23	\$19.92	\$39.84

Critical Records of Animal Production (C.R.A.P.)

Price: Free

Systems: iPhone, iPad



- Keep track of manure applications, incorporations, and transfers.
- Generate spreadsheets of records.
- Send reports to your computer via e-mail and open them in Excel.



Nutrient Removal Calculator

Price: Free

Systems: iPad, iPhone



- This tool calculates nutrient removal based on crop type and intended yield goal.

Carrier 11:25 PM

Nutrient Removal Calculator

Crop Type:

Crop Name:

Yield Goal:

Calculate

Carrier 11:25 PM

Nutrient Removal Calculator

APPROXIMATE NUTRIENT REMOVAL (lb/ac)

	N	P	K	Mg	Ca	S
Cabbage (ton)	13.00	4.80	16.00	2.00	4.80	4.40
Total	13.00	4.80	16.00	2.00	4.80	4.40

Return

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Previous Next

Apples

Dry Beans

Cabbage

Cantaloupe

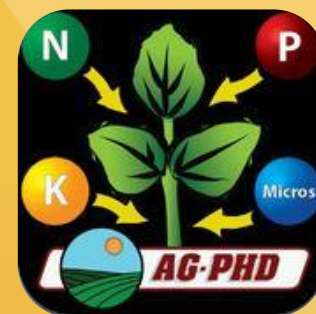
Celery

A&L Canada Laboratories Inc.

Fertilizer Removal by Crop

Price: Free

System: iPhone, iPad, Android



- Select your crop and the desired yield for that crop.
- The app provides the amount of vital crop nutrients that your desired yield will need.
- Results can be saved within the app and e-mailed to yourself or your agronomist for later reference.



AG-PHD

Yield Goal: Cwt

Nutrient	Grain	Stover	Total
Nitrogen (N)	54	56	110
Phosphate (P ₂ O ₅)	19	4.80	24
Potassium (K ₂ O)	18	82	100
Sulfur (S)	5.00	12	10

* N, P, K and S numbers courtesy International Plant Nutrition Institute.

The logo for Extension features the word "extension" in a grey, lowercase, sans-serif font. A large, orange, curved line arches over the text, starting from the left side of the 'e', passing over the 'x', and ending on the right side of the 'n'. There are two small grey dots above the 'e' and the 't' respectively.

extension

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Learning Network™**

Livestock and Poultry Environmental Learning Center (LPELC)

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- Recorded conference presentations

www.extension.org/animal_manure_management

- Air quality
- Beginning farmer
- Climate change
- Manure management
- Economics of manure
- Regulations
- Environmental planning
- Manure treatment
- Small farms
- Manure storage & handling
- Mortality management

Thank you!

UNIVERSITY OF
Nebraska
Lincoln

Amy Millmier Schmidt, Ph.D., P.E.

Assistant Professor

Livestock Bioenvironmental Engineer

Department of Biological Systems Engineering

213 L.W. Chase Hall
P.O. Box 830726
Lincoln, NE 68583-0726

(402) 472-0877
aschmidt@unl.edu