

Pasture Assessment for Water Resource Protection



For use with all animals on pasture including beef cattle, dairy, goats, horses, poultry, sheep, swine, and exotics.



INDIANA FARMSTEAD ASSESSMENT PROGRAM

Determining water quality on your farm with this assessment takes just two steps: first, use the **Quick Check** on pages 2-3 to help identify areas of risk to your water quality; second, follow up the **Quick Check** by using the **Action Plan** that begins on page 4. For additional help in your area contact the local support organizations listed on the back page. Related Web sites and publications are shown on pages 10-11.

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Pasture Assessment for Water Resource Protection was developed and coordinated by Brent Ladd, Water Quality Specialist, and Jane Frankenberger, Assistant Professor and Water Quality Engineer, Purdue University. Funding was provided by Indiana Department of Environmental Management through a Non-point Source Pollution Prevention grant. We wish to thank the following reviewers for their extensive input and review of this publication: Keith Johnson, Purdue University; Jim Krecji and Ken Eck, Purdue University/Clean Water Indiana; David Trotter, Jim Peter, and Kelly Easterday, Purdue University Cooperative Extension Service; Darrell Brown, Tony Bailey, and Victor Shelton, NRCS; Brett Canaday, Madison County SWCD; and the Indiana Farm*A*Syst Steering Committee.



QUICK CHECK

Indiana has one million acres of permanent pasture used in a variety of livestock operations. Well-managed pasture helps ensure good water quality, though risks to water quality may still occur. Your answers to the Quick Check will identify any need for further action. This worksheet covers well protection, grazing, forages, stream, ditch, and wetlands management, and nutrient management & soil conservation.

If you answer “No” to any questions in one or more sections please refer to the Action Plan starting on page 4 for information on how to reduce risk to your water quality.

Indiana Farmstead Assessment packet (WQ-22) also includes assessments for 10 additional farmstead areas, including fuel, fertilizer, and pesticides. This packet is available from your local Extension office.

Well Protection

Yes No

- 1. Has well water been checked for nitrates and bacteria within the last three years?
- 2. Are drinking water wells cased to a minimum depth of 25 feet below the ground, or have you had the well inspected by a licensed well driller or plumber?
- 3. Are all potential sources of contamination (such as pesticide storage, fuel tanks, livestock facilities) located at least 100 feet away and downhill from your well?
- 4. Have all abandoned wells on your property been properly sealed?
- 5. Are dead animals composted or incinerated at least 100 feet away and downhill from wells?

Grazing Management

Yes No

- 1. Do you maintain appropriate animal densities and/or use rotational grazing on all pastures (refer to page 3 to calculate stocking rates)?
- 2. Do you monitor pastures regularly for forage and soil condition?
- 3. Are all pastures free of visible erosion and worn areas?

(Grazing Management continued)

Yes No

- 4. Are all pastures free of soil compaction?
- 5. Do you rotate feeding, watering, and other heavy use areas to prevent buildup of manure and muddy conditions?
- 6. Do you time grazing in relation to plant growth in order to maintain long-term vegetative cover?

Forage Management

Yes No

- 1. Do pastures consist of mostly desired plant species?
- 2. Are forage species matched to the soils and animals in your pastures?
- 3. Do you time grazing such that minimum forage heights are maintained or exceeded at all times (minimum forage heights are species dependent)?
- 4. To prevent overgrazing prior to winter freeze, do you stockpile some paddocks in late summer/early autumn for use in late autumn and early winter?

Stream, Ditch, and Wetlands Management

Yes No

- 1. Do you utilize buffer strips, perennial vegetation, and setbacks where animals graze or when applying manure near streams, ditches, and wetlands?
- 2. Is fencing or other means used to limit livestock access to stream, ditch, wetlands, and pond areas?
- 3. Are stream, ditch, and pond banks stable with a high degree of perennial plant cover?
- 4. Do you supply an alternative source of water away from streams and ponds and/or allow only narrow access for drinking from streams and ponds?
- 5. Are springs and seeps protected from animal traffic or properly developed for watering stock?
- 6. Is the water clear and stream beds free of excessive sediment?

Nutrient Management & Soil Conservation

Yes No

- 1. Do you manage the soil on your farm by following a nutrient management and soil conservation plan?
- 2. Do you maintain legumes in your pastures to reduce the need for nitrogen fertilization?
- 3. Are organic matter, legumes, and manure used to best advantage in reducing fertilization needs?
- 4. Before fertilizing or liming pastures do you use soil tests to pinpoint nutrient needs of the forages you grow?
- 5. If additional fertilizer is applied to pastures, do you maintain a 100 foot buffer near surface water and other vulnerable areas?
- 6. Does soil have at least 80% grass and plant cover for soil erosion control?

Suggested Ranges of Grazing Duration for Rotational Grazing (based on average forage production).

Animal Species	Grazing Days Per Paddock
Cow/Calf Operation	3-7 Days
Stocker Operation	1-3 Days
Dairy Operation	0.5-1 Day
Ewe/Lamb Operation	2-5 Days
Feeder Lambs	1-3 Days
Horses	5-7 Days
Poultry (base on vegetative conditions and system type)*	
Swine (sows)	1-2 Days

Calculating the Number of Paddocks Required :

(Average Rest Period/Grazing Days) + 1

Example:

(30 rest days per paddock for re-growth/ 3 grazing days) + 1=11 paddocks needed.

Sources: Based on NRCS Field Office Technical Guide, Prescribed Grazing 528A

*Herman Beck-Chenoweth, USDA-SARE Free-Range Poultry Guide.

Stocking Rates for Your Pastures.

Use the following general formulas to estimate animal numbers or grazing days appropriate for your pastures:

$$AN = \frac{TFP/Ac. \times Ac. \times \%HE}{AW \times IR \times Days} \quad Days = \frac{TFP/Ac. \times Ac. \times \%HE}{AW \times IR \times AN}$$

AN = Animal Numbers

TFP = Total Forage Production (in lbs./acre dry weight)

Ac. = Acres

%HE = Percent Harvest Efficiency (same as % grazing efficiency)

Guide: Continuous grazing = 25% - 50%

3-7 days grazing = (8-12 paddocks)=50% - 60%

0.5-3 days grazing = (24+ paddocks)=60% - 75%

AW = Animal Weight (pounds)

IR = Intake Rate in % body weight

Guide: 2.0% for maintenance

2.6% for annual average production

3.0% for lactating and fast growing animals

4.0% for high production

Days = Days of grazing planned (160 - 210 days in Indiana)

Source: NRCS Field Office Technical Guide, Prescribed Grazing 528A

Average Daily Water Requirements for Pastured Animals

(gallons/head/day). Requirements increase during lactation or hot weather.

Dairy	Beef	Sheep or Goats	Horses	Poultry	Swine
25.0	12.0	1.5	12.0	0.05	4.0

Sources: Based on NRCS Field Office Technical Guide, Prescribed Grazing 528A
Purdue University Extension.

ACTION PLAN

Location of Property _____

Date of Plan _____

Directions: Based on your Quick Check assessment, mark your Areas of Concern below and follow through with the recommended steps to address your concerns. Area of Concern categories and numbers correspond with categories and numbers from the Quick Check. Publications are listed on pages 10-11. State and local contacts are on the back page. Recording your actions provides a record of your efforts to protect water quality.

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
<p>Well Protection:</p> <p><input type="checkbox"/> 1. Well water has not been tested in last three years for bacteria and nitrate.</p>	<p>a. Get well water tested for bacteria and nitrate. Check with local Health Department.</p> <p>b. Use a home testing kit to provide a screening for these contaminants.</p>	<p>WQ-1 Water Test Laboratories.</p> <p>Look in local hardware stores for simple test kits.</p>	
<p><input type="checkbox"/> 2. Well casing does not extend 25 feet below ground.</p>	<p>a. Have the well inspected by a licensed well driller.</p> <p>b. Have proper casing installed</p> <p>c. Drill a new well.</p> <p>d. If the well is abandoned have it sealed by a licensed well driller.</p>	<p>WQ-22 Indiana Farmstead Assessment</p> <p>Contact IDNR for well guidelines and a list of well drillers.</p>	
<p><input type="checkbox"/> 3. Potential sources of contamination are within 100 feet from or uphill from the well.</p>	<p>a. Assess the risk level of these sources, including whether the source is uphill or downhill from the well.</p> <p>b. Remove or contain the potential sources if possible.</p>	<p>WQ-22 Indiana Farmstead Assessment</p>	
<p><input type="checkbox"/> 4. Abandoned well has not been sealed.</p>	<p>a. Properly seal the well.</p> <p>b. Contact your local well driller.</p>	<p>WQ-21 Plugging Abandoned Wells. A list of well drillers is available from IDNR, Division of Water.</p>	
<p><input type="checkbox"/> 5. Dead animal disposal may put ground water at risk.</p>	<p>a. Incinerate or compost dead animals away from ditches, streams, and wells.</p> <p>b. Burial is an option, especially for a single animal or for very small animals, but burial can pose greater risks to groundwater. Animal must be at least 4 feet below ground and covered with 4 feet of soil.</p> <p>c. For rendering service pick-up, place dead animals away from ditches, streams, and wells.</p>	<p>NRAES-54 On-Farm Composting, NRCS-FOTG-IN Composting Facilities 317. Contact the State Board of Animal Health for more information on dead animal disposal.</p>	

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
Grazing Management: <input type="checkbox"/> 1. Pastures are not rotated and/or pastures are overgrazed.	a. Develop a rotational grazing plan to eliminate overgrazing. b. Reduce animal density to a level where pastures remain healthy and free of overgrazing.	NRCS-FOTG-IN Prescribed Grazing 528A, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see contacts section on back page).	
<input type="checkbox"/> 2. Pastures are not monitored.	Begin monitoring pastures weekly for forage height, under or overgrazed spots, and condition of feeding/watering areas.	NRCS-FOTG-IN Prescribed Grazing 528A, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see contacts section on back page).	
<input type="checkbox"/> 3. Pastures have visible soil erosion taking place.	a. Keep livestock off of eroding areas. b. Re-establish eroding areas by re-seeding. c. Implement better pasture rotation so that pastures do not become overgrazed.	AY-253 Forage Selection and Seeding Guide, AY-251 Improving Pastures by Renovation, NRCS-FOTG-IN Pasture & Hay Planting 512, Prescribed Grazing 528A.	
<input type="checkbox"/> 4. Pastures have soil compaction problems.	Defer grazing and renovate pasture. If soil is poorly drained do not graze unless artificial drainage is in place. Follow a prescribed grazing plan.	AY-251 Improving Pastures by Renovation, NRCS-FOTG-IN Pasture & Hay Planting 512, Prescribed Grazing 528A.	
<input type="checkbox"/> 5. Heavy use areas like feeding and watering spots are not rotated and are muddy, build up an excess of manure.	Layout pastures so that feeding, watering, and loafing spots can be rotated and prevent excess manure buildup or erosion problems.	NRCS-FOTG-IN, Prescribed Grazing 528A.	
<input type="checkbox"/> 6. Pastures are not allowed to reach minimum forage heights before being grazed.	Do not allow livestock to graze before <u>minimum heights have been attained</u> . Minimum heights vary greatly depending on forage species. A well-managed rotational pasture system will often allow earlier spring grazing opportunities than otherwise possible.	NRCS-FOTG-IN Prescribed Grazing 528A, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see contacts section on back page).	

NOTES:

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
<p>Forage Management:</p> <p><input type="checkbox"/> 1. Undesired plant species represent a high percentage of total pasture.</p>	<p>a. High populations of undesired plants in pasture are often the result of overgrazing or undergrazing. Overgrazing allows weeds to compete with existing forage. Livestock will eat some weeds, when they are young and vegetative. <u>Use a prescribed grazing plan to help control undesired plant species in your pastures.</u></p> <p>b. Mow thistle species and other undesired species at their flower stage of production, but prior to seed production. You will likely have to mow these plants three times in flower stage before killing the plant.</p> <p>c. Identify all plant species in your pastures. There are many beneficial wild plant species.</p>	<p>WS-11 Weed Control in Alfalfa, WS-12 Multiflora Rose Control in Permanent Grass Pastures, WS-18 Common Chickweed Control in Alfalfa, WS-19 Musk Thistle Control in Permanent Grass Pastures, AY-251 Improving Pastures by Renovation, NRCS-FOTG-IN Pest Management 595A, Prescribed Grazing 528A, Forage Harvest Management 511.</p>	
<p><input type="checkbox"/> 2. Current forages do not match the needs of the animal specie(s) or soils present.</p>	<p>Become familiar with the forage species in your pastures. This will allow you to better monitor and plan your grazing system, prevent overgrazing and erosion, and renovate pastures to meet the needs of each animal species.</p>	<p>AY-253 Forage Selection and Seeding Guide, AY-251 Improving Pastures by Renovation, NRCS-FOTG-IN Pasture & Hay Planting 512, Prescribed Grazing 528A, Purdue Pasture Management Web site (see contacts section on back)</p>	
<p><input type="checkbox"/> 3. Animals are allowed to graze prior to minimum forage heights being attained.</p>	<p>Allowing animals to graze before forages have reached minimum heights recommended for grazing can cause overgrazing of pastures. Make sure you follow a grazing plan that maintains forages in top nutrient condition for your animals. Doing so will conserve soil and protect nearby waterways.</p>	<p>NRCS-FOTG-IN Prescribed Grazing 528A, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see contacts section on back).</p>	
<p><input type="checkbox"/> 4. Livestock are not removed from pasture(s) in time for forage re-growth to occur before killing frost. Forages are not stockpiled for late fall and winter use.</p>	<p>a. Not allowing the re-growth of pasture to occur will leave pastures more susceptible to runoff and erosion until spring growth the following year. <u>It is especially important to allow for fall re-growth near streams.</u></p> <p>b. Stockpiling forages in a few paddocks and/or providing alternatives such as late seeded turnips in row-crop fields during late fall and winter will allow primary pastures to recover and prevent soil and water quality problems.</p>	<p>AY-263 Producing Emergency or Supplemental Forages, AY-231 Determining Spring and Fall Frost-Freeze Risks in Indiana, NRCS-FOTG-IN Prescribed Grazing 528A, Forage Harvest Management 511, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see contacts section on back).</p>	

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
<p>Stream, Ditch, and Wetlands Management:</p> <p><input type="checkbox"/> 1. No buffers or setbacks are in place near waterways.</p>	<p>Installing and maintaining buffers near water ways, wetlands, and sensitive areas such as sinkholes will protect water quality from runoff in pastures.</p>	<p>AY-285 Vegetative Filter Strips, CRP-8 Invest in the Future-Plant Trees, FNR-171 Wetlands, Regulations, and You, Purdue Pasture Management Web site (see p. 12), NRCS-FOTG-IN Fence 862, Filter Strips 393, Riparian Forest Buffer 391, Prescribed Grazing 528A, Wetland Wildlife Habitat Management 644, Univ. of Wisconsin A3699 Grazing Streamside Pastures.</p>	
<p><input type="checkbox"/> 2. Livestock have unlimited access to stream, ditch, wetland, or pond areas.</p>	<p>a. You should prevent livestock from long periods of standing or loafing in the water and from frequent walking on stream, pond, and ditch banks. The use of fencing, paddock layout, and stream crossings can help manage livestock near water while protecting water quality.</p> <p>b. <u>Animals are most motivated to loaf in streams on hot summer days.</u> You can protect water quality by providing shade areas and supplemental water away from streams and ponds.</p>	<p>NRCS-FOTG-IN Prescribed Grazing 528A, Fence 382, Univ. of Wisconsin A3699 Grazing Streamside Pastures.</p>	
<p><input type="checkbox"/> 3. Stream, ditch, or pond banks are eroding and/or do not consist mostly of perennial plants.</p>	<p>a. Exclude livestock on or near stream and pond banks. Make sure fence lines are located such that animal trails do not border the stream bank.</p> <p>b. Establish perennial plantings and maintain a protected buffer near waterways.</p> <p>c. Once banks are stabilized you should use a controlled grazing plan with paddock layout to graze livestock for short times in the riparian zones. Keep animals off the banks during freeze-thaw periods.</p>	<p>NRCS-FOTG-IN Fence 382, Prescribed Grazing 528A, Stream Bank Protection 580, Stream Channel Stabilization 584, Riparian Forest Buffer 391, Univ. of Wisconsin A3669 Grazing Streamside Pastures, Iowa State Pm-1626 Stewards of our Streams.</p>	

NOTES:

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
<p><i>Stream, Ditch, and Wetlands Management (Continued):</i></p> <p><input type="checkbox"/> 4. Livestock are allowed free access to stream or pond and no alternative water source is available.</p>	<p>a. Provide an alternative water source away from streams.</p> <p>b. Install a restricted access point for drinking only.</p> <p>c. Use the stream or pond as a water source, but install a pumping device to move the water from the stream to another location where animals can drink.</p>	<p>Purdue Pasture Management and Great Lakes Grazing Network Web sites (see p. 12), Univ. of Wisconsin A3669 Grazing Streamside Pastures, NRCS-FOTG-IN Fence 382, Prescribed Grazing 528A, Pipeline 561.</p>	
<p><input type="checkbox"/> 5. Spring or seep is not developed for livestock and livestock have free access to the spring area.</p>	<p>a. If spring is needed to water animals, then properly develop the spring for this use.</p> <p>b. Provide an alternative supply of drinking water to the animals and protect spring area with fencing.</p>	<p>NRCS-FOTG-IN Spring Development 574, Prescribed Grazing 528A, Fence 382.</p>	
<p><input type="checkbox"/> 6. Stream is muddy and/or streambed has excess sediment.</p>	<p>a. Make sure you stabilize stream banks and keep livestock off banks during freeze-thaw periods.</p> <p>b. <u>Monitor pastures and follow a grazing plan to prevent overgrazing and soil erosion.</u></p> <p>c. Use buffer strips and establish riparian zones to catch and filter sediment and runoff, as well as provide shade and habitat for wildlife and fish.</p>	<p>AY-285 Vegetative Filter Strips, NRCS-FOTG-IN Fence 382, Filter Strip 393, Fish Stream Improvement 395, Prescribed Grazing 528A, Stream Bank Protection 580, Stream Channel Stabilization 584, Riparian Forest Buffer 391, Iowa State Pm-1626 Stewards of our Streams, USDA-NRCS Stream Visual Assessment NWCC-TN 99-1.</p>	
<p>Nutrient Management & Soil Conservation</p> <p><input type="checkbox"/> 1. No plan is followed for managing nutrients and soils.</p>	<p>a. Get assistance from your local Soil & Water Conservation Office with developing a conservation plan for your farm.</p> <p>b. Research the available information on developing a grazing system for your farm.</p>	<p>See the Statewide Resources section on page 12 for help with Nutrient and Soil Conservation Plans.</p>	
<p><input type="checkbox"/> 2. Legumes are not used in pastures.</p>	<p>Legumes provide nitrogen for grasses and greatly improve pasture quality. If legumes are to be maintained, they must be grazed properly and liming may be necessary. Some legumes can furnish quality grazing during the summer months, when cool season grasses are less productive.</p>	<p>AY-211 Selecting the Right Legume, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see p. 12).</p>	

Area of Concern	What You Can Do	Where You Can Get More Information	Record Your Actions
<p><i>Nutrient Management & Soil Conservation:</i> (Continued):</p> <p><input type="checkbox"/> 3. Fertilization needs remain high and are not met with on-farm nutrient cycling.</p>	<p>a. Nitrogen fertilizer should be used sparingly as it only increases yields for a short time, but decreases legume content of the pasture due to over-shading by grass.</p> <p>b. Make sure you take soil tests and know plant requirements before fertilizing.</p> <p>c. Following a prescribed grazing plan can help you manage on-farm nutrient cycling and reduce outside fertilizer inputs. This ultimately can protect water quality.</p>	<p>AY-9-32 Tri-state Fertilizer Recommendations, AY-277 Calculating Manure & Nutrient Applications, AY-281 Soil Sampling, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see p. 12), NRCS-FOTG-IN Prescribed Grazing 528A.</p>	
<p><input type="checkbox"/> 4. Soil and plant nutrient needs are not known when applying fertilizers.</p>	<p>a. Have soil samples analyzed for available nutrients and understand forage nutrient needs before fertilizing.</p> <p>b. Investigate how a prescribed grazing plan could help you manage nutrients on your farm.</p>	<p>AY-9-32 Tri-state Fertilizer Recommendations, AY-277 Calculating Manure & Nutrient Applications, AY-281 Soil Sampling, Purdue Pasture Management and Great Lakes Grazing Network Web sites (see p. 12), NRCS-FOTG-IN Prescribed Grazing 528A.</p>	
<p><input type="checkbox"/> 5. A buffer around waterways and other sensitive areas is not used when applying fertilizers or manure.</p>	<p>Installing and maintaining buffers near waterways, wetlands, and sensitive areas such as sinkholes will protect water quality from runoff on pastures.</p>	<p>WQ-16 Land Application of Manure, AY-285 Vegetative Filter Strips, FNR-171 Wetlands, Regulations and You, NRCS-FOTG-IN Riparian Forest Buffer 391, Filter Strip 393.</p>	
<p><input type="checkbox"/> 6. Pasture or areas of pasture have less than 80% plant cover.</p>	<p>a. Follow a prescribed grazing plan for maximum forage growth and cover.</p> <p>b. Re-seed pastures and/or use disturbance-rest measures by mowing or grazing to encourage better plant leaf growth and cover.</p> <p>c. Monitor forage growth and time grazing to prevent overgrazing and soil compaction.</p>	<p>AY-253 Forage Selection and Seeding Guide, AY-251 Improving Pastures by Renovation, NRCS-FOTG-IN Pasture & Hay Planting 512, Prescribed Grazing 528A, Purdue Pasture Management Web site (see resources section on p.12)</p>	

NOTES:

WHERE TO GET MORE INFORMATION

Purdue Extension Specialist Assistance:

Dr. Keith Johnson
Professor of Agronomy and Forage Crops Specialist
1150 Lilly Hall of Life Sciences
West Lafayette, IN 47907-1150
Phone: 765-494-4800
E-mail: johnsonk@purdue.edu
Web site: <<http://www.agry.purdue.edu/ext/forages>>

Dr. Tim Johnson & Dr. Kern Hendrix
Department of Animal Sciences
Purdue University
1151 Lilly Hall
Purdue University
West Lafayette, IN 47907-1151
E-mail: tjohnso2@purdue.edu
E-mail: khendrix@ansc.purdue.edu
Web site: <<http://www.ansc.purdue.edu/>>

Lyn Hartman, Hoosier River Watch Coordinator
Purdue University Cooperative Extension Service
Indiana Department of Natural Resources
Natural Resources Education Center
Fort Harrison State Park
5785 Glenn Road
Indianapolis, IN 46216-1066
Phone: 317/541-0617
E-mail: HoosierRiverwatch@ameritech.net
Web site: <<http://www.state.in.us/dnr/soilcons/riverwatch>>

Purdue Extension Publications:

Contact your county Extension office or the Media Distribution Center (1-888-398-4636) for the following:

For additional assessment topics ask for WQ-22 Indiana Farmstead Assessment

AY-211 Selecting the Right legume
AY-231 Determining Spring and Fall Frost-Freeze Risks in Indiana
AY-233 Sweet Clover Production and Utilization
AY-251 Improving Pastures by Renovation
AY-253 Forage Selection and Seeding Guide for Indiana
AY-26 Emergency or Supplemental Forage for Livestock
AY-277 Calculating Manure and Nutrient Applications
AY-281 Soil Sampling for NPK
AY-285 Vegetative Filter Strips
AY-9-32 Tri-state Fertilizer Recommendations
CRP-7 Hay It or Graze It
CRP-8 Invest in the Future-Plant Trees
FNR-171 Wetlands, Regulations, and You
ID-101 Animal Manure as a Plant Nutrient Resource
ID-103 One Litter Pasture System
ID-139 Birdsfoot Trefoil Production & Utilization
ID-153 Managing and Utilizing Pasture for Sheep
ID-167 Maximizing the Value of Pasture for Horses
WQ-1 Water Testing Laboratories
WQ-10 Wetlands and Water Quality

WQ-15 Bacterial Contamination of Household Water
WQ-16 Land Application of Manure
WQ-27 Nitrate and Indiana's Ground Water
WQ-4 Why and How To Test Your Water?
WQ-7 Pastures and Feedlots
WS-11 Weed Control in Alfalfa
WS-12 Multiflora Rose Control in Permanent Grass Pastures
WS-18 Common Chickweed Control in Alfalfa
WS-19 Musk Thistle Control in Permanent Grass Pastures

Purdue University Web Sites:

Beef: <http://www.ansc.purdue.edu/beef>
Dairy: <http://www.anr.ces.purdue.edu/anr/anr/dairy/frame.htm>
Indiana Plants Posionous to Livestock and Pets:
<http://www.vet.purdue.edu/depts/addl/toxic/cover1.htm>
Pasture Management & Rotational Grazing:
<http://www.agry.purdue.edu/ext/forages/rotational/>
Poultry: <http://ag.ansc.purdue.edu/poultry>
Sheep: <http://ag.ansc.purdue.edu/sheep>
Swine: <http://www.ansc.purdue.edu/swine>
Water Quality: <http://www.ecn.purdue.edu/Safewater>

Indiana Natural Resources Conservation Service (NRCS)

6013 Lakeside Blvd.
Indianapolis, IN 46278-2933
Phone: 317-290-3200
Web: <<http://www.in.nrcs.usda.gov>>

Indiana NRCS Specialists:

Del Hall
Grazing Lands Conservation Initiative Coordinator
1931 Liberty Drive
Bloomington, IN 47403
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Lagrange, IN 46761
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2524 E. National Hwy
Washington, IN 47501
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E-mail: victor.shelton@in.usda.gov

NRCS Field Office Technical Guide (FOTG) has standards for many conservation practices including the following related to pasture management and water quality:

382 *Fence*
391 *Riparian Forest Buffer*
393 *Filter Strip*
395 *Fish Stream Improvement*
472 *Use Exclusion*
511 *Forage Harvest Management*
512 *Pasture & Hay Planting*
516 *Pipeline*
528A *Prescribed Grazing*
574 *Spring Development*
580 *Stream Bank Stabilization*
584 *Stream Channel Stabilization*
595A *Pest Management*
644 *Wetland Wildlife Habitat Management*

The above NRCS standards can be accessed through the local Conservation Partnership field offices and/or this Web site: <http://www.in.nrcs.usda.gov> Ask about cost-share opportunities for practice changes on your farm.

Stream Visual Assessment NWCC-TN 99-1, USDA-NRCS from: Contact your local NRCS office.

Grazing streamside pastures A3699 from: University of Wisconsin Extension, Agronomy Department
1575 Linden Drive
Madison, WI 53706
Phone: 608-262-1390
Web site: <http://www.uwex.edu/ces/pubs>

Stewards of our Streams Pm-1626 a, b, c from: Dr. Richard Schultz
Department of Forestry
251 Bessey Hall
Iowa State University
Ames, IA 50011
Phone: 505-294-1458
E-mail: rshultz@iastate.edu

Great Lakes Grazing Network
Indiana Contact:
Ed Heckman, Purdue Extension
Phone: 765/973-9283
E-mail: ed.heckman@ces.purdue.edu
Web: <http://glgn.org/>

The Stockman Grass Farmer, monthly publication
282 Commerce Park Drive
Ridgeland, MS 39157.
Phone: 1-800-748-9808
Web site: <http://www.stockmangrassfarmer.com>

Holistic Resource Management from: The Allan Savory Center for Holistic Management
1010 Tijeras NW
Albuquerque, NM 87102
Phone: 1-800-654-3619
Web site: <http://www.holisticmanagement.org>

Sustainable Livestock Systems Series Publications:

1. Introduction to Paddock Design and Fencing-Water Systems for Controlled Grazing.
2. Nutrient Cycling in Pastures.
3. Rotational Grazing.
4. Assessing the Pasture Soil Resource.
5. Matching Livestock and Forage Resource in Controlled Grazing.
6. Grass-Based and Seasonal Dairying.
7. Sustainable Beef Production.
8. Sustainable Sheep Production.
9. Sustainable Hog Production.

The above publications are available free of charge from: Appropriate Technology Transfer for Rural Areas (ATTRA)
P.O. Box 3657
Fayetteville, AR 72702
Phone: 1-800-346-9140
Web site: <http://www.attra.org>

Agricultural Water Quality Index online from: Robert B. Annis Water Resources Institute
Grand Valley State University
One Campus Drive
Allendale, MI 49401
Web site: <http://www4.gvsu.edu/wri/lab/98-1/index.html>
Also available in hard copy form (\$30) from: Jim Porterfield
American Farm Bureau Foundation for Agriculture
225 Touhy Ave,
Park Ridge, IL 60068
Phone 847-685-8764
Web site: <http://www.fb.com>

Indiana Farm Contacts & Tours:

Rotational Grazing with Dairy Cattle:
Dave & Helen Forgey
Forgey's River-View Farm Inc.
6032 W. Georgetown Rd.
Logansport, IN 46947
Phone: 219-652-2461 Fax 219-652-2460
E-mail: forgraze@carlnet.org
Web site: <http://www.carlnet.org/~forgraze>

Pastured Pig & Poultry Systems contact:
Steve Bonney
Sustainable Earth
100 Geornton Ct.
West Lafayette, IN 47906
Phone: 765/497-0164
E-mail: sbonney@iquest.net

LOCAL & STATEWIDE CONTACTS

Abbreviation	Contact Information	Phone
Purdue Extension	<p>Purdue University Cooperative Extension Service Call your local county office listed in the County Government Offices section of the phone book or call 1-888-EXT-INFO for on-campus assistance. Web: <http://www.ces.purdue.edu/> Purdue Pasture Management Web Site: <http://www.agry.purdue.edu/ext/forages/rotational/> Publications are also available by calling the Media Distribution Center at 1-888-398-4636. Publications are on-line at <http://www.agcom.purdue.edu/></p>	<p>1-888-398-4636 (toll free)</p> <p>Local Extension Office Phone: _____</p>
NRCS SWCD IDNR	<p>USDA Natural Resources Conservation Service IN Dept. of Natural Resources, Division of Soil Conservation County Soil and Water Conservation District Web (NRCS): <http://www.in.nrcs.usda.gov/> Web (SWCD): <http://www.iaswcd.org/index.htm> Web (IDNR-Soil Conservation): <http://www.ai.org/dnr/soilcons> Each county in Indiana has a Soil & Water Conservation Office. Phone numbers are usually listed in the County Government Offices section of the phone book.</p>	<p>Local SWCD Office Phone: _____</p>
IDEM	<p>Indiana Department of Environmental Management Confidential Assistance, Ag Relations Office Phone: 317/232-8587 Emergency Response for spills 1-888-233-7745 Web: http://www.state.in.us/idem/olq</p>	<p>317/232-8587</p>
IDNR	<p>Indiana Department of Natural Resources Division of Water, Well Water Information Phone: 1-877-928-3755 Web: <http://www.state.in.us/dnr/water></p>	<p>1-877-928-3755 (toll free)</p>
Farm*A*Syst	<p>Indiana Farm*A*Syst Coordinator 1146 Agricultural and Biological Engineering Purdue University West Lafayette, IN 47907-1146 Phone: 765/496-6331 Web: <http://www.ecn.purdue.edu/SafeWater></p>	<p>765/496-6331</p>
BOAH	<p>Indiana State Board of Animal Health (Dead Animal Disposal Information) 805 Beachway Drive, Suite 50 Indianapolis, IN 46224-7785 Phone: 317/227-0300 Web: <http://state.in.us/boah></p>	<p>317/227-0300</p> <p>Your Veterinarian: _____</p>
GLGN	<p>Great Lakes Grazing Network Kim Cates, GLGN coordinator 5992 CTH T Spring Green, WI 53588 Phone: 608/588-7859 E-mail: rlcates@mhct.net Web: <http://glgn.org/></p>	<p>Indiana Contact: Ed Heckman, Purdue Extension Phone: 765/973-9283 E-mail: ed.heckman@ces.purdue.edu</p>

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