

Pasture Assessment for Water Resource Protection

(Source: Bulletin WQ-39 developed by Indiana Farmstead Assessment Program, Purdue University and Indiana Farm-A-Syst.)

IF YOU ANSWER NO TO ANY QUESTIONS IN ONE OR MORE SECTIONS PLEASE REFER TO THE ACTION PLAN THAT FOLLOWS FOR INFORMATION ON HOW TO REDUCE RISK TO YOUR WATER QUALITY.

Well Protection	Yes	No
Has well water been tested for nitrates and bacteria within the past 3 years?		
Are drinking water wells cased to a minimum depth of 25' below the ground, or have you had the well inspected by a licensed well driller or plumber?		
Are all potential sources of contamination located at least 100' away and downhill from your well?		
Have all abandoned wells on your property been properly sealed?		
Are dead animals composted or incinerated at least 100' away and downhill from wells?		
GRAZING MANAGEMENT	Yes	No
Do you maintain appropriate animal densities and/or use rotational grazing on all pastures (refer to table to calculate stocking rates)?		
Do you monitor pastures regularly for forage and soil condition?		
Are all pastures free of visible erosion and worn areas?		
Are all pastures free of soil compaction?		
Do you rotate feeding, watering and other heavy use areas to prevent the build-up of manure and muddy conditions?		

Do you time grazing in relation to plant growth in order to maintain long-term vegetative cover?		
FORAGE MANAGEMENT	Yes	No
Do pastures consist of mostly desired plant species?		
Are forage species matched to the soils and animals in your pastures?		
Do you time grazing such that minimum forage heights are maintained or exceeded at all times?		
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 & Wetlands Management		
Do you utilize buffer strips, perennial vegetation, and setbacks where animals graze or when applying manure near streams, ditches and wetlands?		
Is fencing or other means used to limit livestock access to stream, ditch, wetlands and pond areas?		
Are stream, ditch and pond banks stable with a high degree of perennial plant cover?		
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?		
Are springs and seeps protected from animal traffic or properly developed for watering stock?		
Is the water clear and stream beds free of excessive sediment?		
NUTRIENT MANAGEMENT & SOIL CONSERVATION	Yes	No
Do you manage the soil on your farm by following a nutrient management plan and soil conservation plan?		
Do you maintain legumes in your pastures to reduce need for nitrogen fertilizer?		
Are organic matter, legumes and manure used to best advantage in reducing fertilization needs?		

Before fertilizing or liming pastures do you use soil tests to pinpoint nutrient needs of the forages you grow?		
If additional fertilizer is applied to pastures, do you maintain a 100' buffer near surface water and other vulnerable areas?		
Does soil have at least 80% grass and plant cover for soil erosion control?		

Notes:

Action Plan

Based upon 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. Recording your actions provides a record of your efforts to protect water quality.

AREA OF CONCERN	WHAT YOU CAN DO	RECORD YOUR ACTIONS
<i>Well Protection</i>		
Well water has not been tested in last 3 years for bacteria and nitrate.	<p>Have well water tested for bacteria and nitrate. Check with local health department.</p> <p>Use a home testing kit to provide a screening for these contaminants.</p>	
Well casing does not extend 25' below ground.	<p>Have the well inspected by a licensed well driller.</p> <p>Have proper casing installed.</p> <p>Drill a new well.</p> <p>If the well is abandoned have it sealed for a licensed well driller.</p>	
Potential sources of contamination are within 100' from or uphill from the well.	<p>Assess the risk level of these sources, including whether the source is uphill or downhill from the well.</p> <p>Remove or contain the potential sources if possible.</p>	
Abandoned well has not been sealed	<p>Properly seal the well.</p> <p>Contact your local well driller.</p>	
Dead animal disposal may put groundwater at risk.	<p>Incinerate or compost dead animals away from ditches, streams and wells.</p> <p>Burial is an option, especially for a single animal or for very small animals, but burial can pose greater risks to groundwater. Animals must be at least 4' below ground and covered with 4' of soil.</p> <p>For rendering service pick-up, place dead animals away from ditches, streams and wells.</p>	

<i>Grazing Management</i>	What you can do	Record your actions
Pastures are not rotated and/or pastures are overgrazed.	Develop a rotational grazing plan to eliminate overgrazing. Reduce animal density to a level where pastures remain	
Pastures are not monitored.	Begin monitoring pastures weekly for forage height, under or overgrazed spots, and condition of feeding/watering areas.	
Pastures have visible soil erosion occurring.	Keep livestock off of eroding areas. Re-establish eroding areas by re-seeding. Implement better pasture rotation so that pastures do not become overgrazed.	
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.	
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 build-up or erosion problems.	
Pastures are not allowed to reach minimum forage heights before being grazed.	<u>Do not allow livestock to graze before 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.	
Notes:		

FORAGE MANAGEMENT	What you can do	Record your actions
<p>Undesired plant species represent a high percentage of total pasture.</p>	<p>High populations of undesired plants 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>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>Identify all plant species in your pastures. There are many beneficial wild plant species.</p>	
<p>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>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>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>Not allowing the re-growth of pasture to occur will leave pastures more susceptible to erosion until spring growth the following year. <u>It is especially important to allow for fall re-growth near streams.</u></p> <p>Stockpiling forages in a few paddocks and/or providing alternatives such as late seeded turnips in row-crops fields during late fall/winter will allow primary pastures to recover and prevent soil and water quality problems.</p>	

STREAM, DITCH & WETLANDS MANAGEMENT	What you can do	Record your actions
No buffers or setbacks are in place near waterways.	Installing and maintaining buffers near water ways, wetlands and sensitive areas such as sinkholes will protect water quality from run off in pastures.	
Livestock have unlimited access to stream, ditch, wetland or pond areas.	<p>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 fending, paddock layout and stream crossings can help manage livestock near water while protecting water quality.</p> <p><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>	
Stream, ditch or pond banks are eroding and/or do not consist mostly of perennial plants.	<p>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>Establish perennial plantings and maintain a protected buffer near waterways.</p> <p>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>	
Livestock are allowed free access to stream or pond and no alternative water source is available.	<p>Provide an alternative water source away from streams.</p> <p>Install a restricted access point for drinking only.</p> <p>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>Notes:</p> <p>Spring or seep is not developed for livestock and livestock have free access to the spring area.</p>	<p>If spring is needed to water animals, then properly develop it for this use.</p> <p>Provide an alternative supply of drinking water to the animals and protect spring area with fencing.</p>	
<p>Stream is muddy and/or streambed has excess sediment.</p>	<p>Make sure you stabilize stream banks and keep livestock off banks during freeze-thaw periods.</p> <p><u>Monitor pastures and follow a grazing plan to prevent overgrazing and soil erosion.</u></p> <p>Use buffer strips and establish riparian zones to catch and filter sediment and run off, as well as provide shade and habitat for fish and wildlife.</p>	
<p>NUTRIENT MANAGEMENT AND SOIL CONSERVATION</p>	<p>What you can do</p>	<p>Record your actions</p>
<p>No plan is followed for managing nutrients and soils.</p>	<p>Obtain assistance from your local SWCD office with developing a plan for your farm.</p> <p>Research the available information on developing a grazing system for your farm. For assistance, contact your local OSU Extension office.</p>	
<p>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>Notes:</p>		

<p>Fertilization needs remain high and are not met with on-farm nutrient cycling.</p>	<p>Nitrogen fertilizer should be used sparingly as it only increases yields for a short time, but decreases legume content of the pasture due to overshadowing by grasses.</p> <p>Make sure you take soil tests and know plant requirements prior to fertilization.</p> <p>Following a prescribed grazing plan can help manage on-farm nutrient cycling and reduce fertilizer inputs. This ultimately can protect water quality.</p>	
<p>Soil and plant nutrient needs are not known prior to applying fertilizer.</p>	<p>Have soil samples analyzed for available nutrients and understand forage nutrient needs before fertilizing.</p> <p>Investigate how a prescribed grazing plan could help you manage nutrients on your farm.</p>	
<p>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>Pasture or areas of pasture have less than 80% plant cover.</p>	<p>Follow a prescribed grazing plan for maximum forage growth and cover.</p> <p>Re-seed pastures and/or use disturbance-rest measures by mowing or grazing to encourage better plant leaf growth and cover.</p> <p>Monitor forage growth and time grazing to prevent overgrazing and soil compaction.</p>	
<p>Notes:</p>		

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

<i>Animal Species</i>	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.

*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.

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

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

AN = animal numbers

TFP = total forage production (in pounds/acre dry weight)

Ac. = acres

%HE =% harvest efficiency (same as% grazing efficiency)

Guide: Continuous grazing = 25 to 50%

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

0.5 to 3 days grazing = (24+ paddocks) = 60 to 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

Average Daily Water Requirements for Pastured Animals (gallons/head/day).
(Requirements increase during lactation or hot weather.)

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