

*Slide Descriptions for
 “Introducing a Farm
 Evaluation System”*

No.	Identification	Description
1	Pennsylvania Farm•A•Syst title slide	Pennsylvania Farm•A•Syst—Farm Evaluation System—protecting our shared water resources. Based on a national program, adapted and field-tested in Pennsylvania since 1992, this first part of the systems focuses on top priority water quality issues around farmsteads. Additional farmstead issues and possibly field-based materials will be developed as resources are available.
2	Red barn, equipment, and lane aerial farm shot	Farmsteads are extremely busy places. Livestock buildings and barnyards, chemical storage and mixing, as well as homes and septic systems are concentrated on a few acres.
3	Farm with stream	More 95 percent of our nation’s rural residents depend on groundwater for their water needs. Surface water streams and ponds also play an important role in the work and recreation of farm families. Groundwater moving underneath and surface water flowing through farms is affected by what happens along the way and carries the results downstream.
4	Well casing and wellhead	Somewhere in the midst of the farmstead there is usually one or more wells supplying the water needs for the livestock and people. Many of the activities around the wellhead can potentially contaminate the groundwater.
5	Soil in hand	It was once thought that soil was a perfect filter, magically removing contaminants before they reached our wells. Unfortunately, soil cannot filter out all contaminants. Pollution prevention is the key to maintaining a safe water supply.
6	Cow in stream	Activities around farmsteads also can affect surface water. Pesticides, bacteria, nitrogen, and phosphorus are major pollutants that can move from farmsteads directly into streams.
7	Pennsylvania Farm•A•Syst purpose slide	The Pennsylvania Farm•A•Syst—a Farm Evaluation System—is an educational tool about the relationship of farm conditions and management to water quality. It can promote an awareness of how specific features around a farm affect water quality. It also can be used to recognize farmers who invest the extra effort to protect water quality.
8	Sample scoring matrix	The farm evaluation system is a scorecard approach to compare conditions and management on individual farms to the best current standards for water quality protection.
9	Person doing evaluation	It can be used as a self-evaluation or in cooperation with technical advisor.
10	Pennsylvania Farm•A•Syst cooperators slide	Pennsylvania Farm•A•Syst is a cooperative effort among Penn State Cooperative Extension, Pennsylvania Association of Conservation Districts, Pennsylvania Department of Agriculture, Pennsylvania Department of Environmental Protection, and USDA Natural Resources Conservation Service.
11	Pennsylvania Farm•A•Syst materials slide	The Pennsylvania Farm•A•Syst materials include introductory explanations, a farmstead map, a preliminary screening quiz to identify the most important worksheets to be completed, a set of worksheets, and wrap-up materials.

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12	Preliminary screening quiz	The quiz is a short set of questions for each worksheet when the intent is to target the most appropriate worksheets for more detailed evaluation.
13	Farmstead map	The farmstead map is a sketch of the layout of the features that are related to water quality. It can be helpful in doing the evaluations or as a record for changes that are made.
14	Example farmstead map	The maps do not need to be fancy. They are intended to show relationships around the farmstead. Specific measurements can be added to the sketch from field notes as needed.
15	Pennsylvania Farm•A•Syst worksheets	The current program focuses on ten priority areas around the farm. Additional worksheets are planned for other areas of the farmstead and for field activities.
16	Worksheet contents	Each worksheet follows the same format so the topics and sequence are the same for each category.
17	Wrap-up activities	The wrap-up activities include a calculation of the overall ranking for the farm and considerations for possible improvements, as needed. If the evaluation is part of a larger educational program, a sample post-evaluation survey is included.
18	Person looking at well casing	The condition and construction of wells on the farmstead is the focus for worksheet number one. The area immediately surrounding the well is critical to the water quality of the well.
19	Well on a hill with buildings below	Wells should be located uphill or far away from contamination sources. Surface water should be diverted away from the wellhead.
20	Recommended separation distances	Contamination sources such as septic system drainfields, barnyards, and fuel tanks should be located as far from the wellhead as possible—preferably greater than 300 feet.
21	Crooked well casing cap	Well caps and casings should have no visible cracks or holes. Well caps should always be firmly secured over the well casing.
22	Wellhead casing the inside.	Well casings should be at least 8–12 inches above the ground to prevent water from running down the inside.
23	Abandoned well	Dug wells are much more susceptible to contamination than drilled wells. Abandoned dug wells are like sinkholes, serving as a direct conduit to groundwater. These wells should be adequately sealed to reduce the risk of pollutants directly entering the shallow groundwater.
24	Pennsylvania Farm•A•Syst well features	The condition of every well on the farm can be scored on each of these features.
25	Two shelves of pesticides	Pesticide and fertilizer storage and handling is the focus of worksheet number two. Dry pesticide formulations are easier to manage safely and are less likely to accidentally contaminate groundwater than liquid materials.
26	Pesticides stored in tub	The amount of pesticides and fertilizers stored should be kept to a minimum. Accidental leakage of pesticides should be avoided and floors in the storage area should be impermeable so that spills can be cleaned up before the pesticides can leach away.
27	Padlock	Pesticides should be securely locked away at all times and stored in their original containers with the original labels. They should be kept away from busy areas where they may be bumped or damaged.
28	Pesticides and well distance separation	Pesticide storage and mixing areas should be at least 300 feet from the wellhead.
29	Pesticide mixing pad	Properly constructed pesticide and fertilizer mixing pads can prevent spills and rinse water from getting into streams or groundwater.
30	Backflow protection	A backflow prevention device provides an air gap between the water supply and the sprayer tank that helps to avoid backsiphoning of pesticides directly into the water.

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31	Person standing over tank	Keeping an eye on a spray tank the whole time it is being filled will reduce the risk of accidents that could contaminate groundwater or nearby streams.
32	Person rinsing pesticide container	Cleaning by triple rinsing and proper disposal of pesticide containers at a pesticide container recycling site or an approved landfill helps to avoid the small spills and leaks or unintentional contamination.
33	Sprayboom in field	Rinsing sprayers and applying the rinsate on a field as recommended on the pesticide label keeps the extra pesticide away from critical areas around the farmstead where safe handling may be more difficult.
34	Pennsylvania Farm•A•Syst pesticide and fertilizer storage and handling features	Pesticide and fertilizer storage and handling can be ranked on each of these categories.
35	Effluent surfacing from a household septic tank absorption field water contamination.	Household wastewater management is the focus of worksheet number three. Nearly one-third of Pennsylvania homes, mostly in rural areas including farms and rural residences, rely on septic systems. Malfunctioning systems are common and can be a source of groundwater or even surface water contamination.
36	Septic tank pumping	Pumping septic tanks on a regular basis helps the bacteria in them working effectively and prolongs the useful life of the absorption field. The recommended frequency depends on the size of the tank and the number of people using the system.
37	Septage discharge at sewage treatment plant	Septage can be conveniently handled at a traditional sewage treatment plant. Other options are possible, but they generally require careful management and following detailed guidelines.
38	Drain field and well separation distances	Wells should be located at least 100 feet from the septic drain field.
39	Old home in country	Septic systems that have been in place for more than 15 years should be regularly inspected for leaks.
40	Pennsylvania Farm•A•Syst household wastewater features	Household wastewater management can be ranked on each of these features.
41	Cattle in feed area	Barnyard management is the focus of worksheet number four. Exercise lots, feedlots, and barnyards are often areas with a high density of livestock. They require effective management to minimize potential pollution.
42	Rain spouting for barn roof	Keeping clean water clean is an essential feature of successful barnyard management. Rain spouting that collects roof water and channels it away from the barnyard reduces the amount of water that can pick up pollutants from the barnyard.
43	Diversion above barnyard	Upslope diversions that keep runoff from cutting through the barnyard will also reduce the barnyard runoff to be managed.
44	Filter strip between barnyard and stream	Treating any contaminated water leaving the barnyard can be done by directing runoff into a manure pit or across a filter strip. A well-designed filter strip with rapidly growing vegetation removes sediment and absorbs nutrients.
45	Concrete barnyard	Regular cleaning and scraping reduces the amount of manure leaving the barnyard during rainfall.
46	Barnyard and well distance	Barnyards located at least 100 feet from the nearest well are less likely to pollute groundwater.
47	Cattle on grassed exercise area	Grassed exercise areas for cattle not only keep them healthier, but the vegetative cover reduces runoff as compared to a bare earthen exercise area.

No.	Identification	Description
48	Pennsylvania Farm•A•Syst barnyard features	Barnyard management can be ranked on each of these features.
49	Person looking at milk tank in barn	Milkhouse wastewater management is the focus of worksheet number five. Because milkhouse wastewater usually contains milk solids, fat, manure, and soil, it can overload normal disposal systems and be a source of water pollution.
50	Milkhouse discharge into manure pit	Milkhouse wastewater can be channeled into a storage pit before being spread on cropland. Septic systems for milkhouse water should be pumped regularly.
51	Drain on milkhouse floor	Capturing the first milk line or clean-up rinse for feeding to calves or adding to barn manure reduces the biological load on waste handling systems.
52	Pennsylvania Farm•A•Syst milkhouse features	Management of milkhouse wastewater can be ranked on each of these features.
53	Cow on eroded bank	Stream and drainageway management is the focus of worksheet number six. Allowing cattle in streams causes soil erosion by breaking down streambanks and depositing nutrients and bacteria into the water. Waterborne diseases in the stream also can cause illness in livestock.
54	Stream after fencing	Limiting cattle access to streams reduces erosion caused by trampling and prevents direct contamination from manure.
55	Cattle crossings	A stabilized cattle and equipment crossing constructed of crushed stone, hog or cattle slats, pre-cast concrete, or various other materials can be an economical, low-maintenance solution to streambank degradation. The crossing allows livestock to drink from the stream and equipment to cross, but limits the effects of the traffic to one treated area.
56	Pennsylvania Farm•A•Syst stream and drainageway features	If there is a stream or drainageway on the farm, its management can be ranked on each of these features.
57	Petroleum storage location	Petroleum storage and handling is the focus of worksheet number seven. The location of the storage tank in relation to groundwater or surface water is critical to water quality protection. The tank should be located on well-drained soils downslope from any wells.
58	Monitoring a tank	Proper installation, operation, and monitoring of petroleum storage tanks can prevent potential pollutants from contaminating groundwater or surface water.
59	Proper barriers around tanks	The petroleum storage tanks should be protected by proper barriers in a well-ventilated enclosure.
60	Fire safety equipment near a tank	A fire extinguisher and spill protection kit should be located near the storage tank in case of an accident.
61	Pennsylvania Farm•A•Syst petroleum storage and handling features	Management of petroleum storage and handling can be ranked on each of these features.
62	Filled bunker silo	Silage storage management is the focus of worksheet number eight. Harvested crops should have the recommended moisture content for the structure, and any additional water should be diverted away from the silo area.
63	Concrete walls of a bunker silo	Proper management of silage storage areas is crucial in preventing contamination of groundwater or surface waters. A bunker silo such as this should have no cracks in the concrete, and the floor should be kept clean.

No.	Identification	Description
64	Pennsylvania Farm•A•Syst silage storage features	Silage storage management can be ranked on each of these features.
65	Temporary animal waste storage area and barn	Animal waste storage and management is the focus of worksheet number nine. Storing animal waste properly can be technically involved and is often subject to regulations regarding design, location, maintenance, and monitoring of facilities.
66	Animal waste storage structure	Animal waste storage facilities should be located down or across slope from a drinking water well or surface water. They should also be routinely inspected for leaks, spills, or overflows, and repairs should be made as needed.
67	Empty temporary animal waste storage pad	Temporary animal waste storage areas can be sources of runoff to surface water or groundwater contamination by nitrates, so it is important to divert clean runoff or roof water away from the storage area.
68	Pennsylvania Farm•A•Syst animal waste storage features	Animal waste storage and management can be ranked on each of these features.
69	Dairy manure land application	Animal waste land application management is the focus of worksheet number ten. Managing to protect water quality depends on applying rates based on crop requirements and soil conditions, knowing the composition of the animal waste, avoiding runoff from recent applications, and protecting the application areas from runoff and soil erosion.
70	Liquid manure spreading	Calculate planned application rates based on soil tests, crop nutrient utilization information, and animal waste analysis. Records should be reviewed and used to improve next year's nutrient management plan.
71	Animal waste application equipment calibration	Animal waste application equipment should be calibrated to the proper application rate before each application period and should be checked at least once during the period.
72	Uniformly applied animal waste	Animal waste should be applied uniformly over the entire suitable area.
73	Animal waste incorporation	Incorporating animal waste within twenty-four hours after application can help to protect surface waters.
74	Pennsylvania Farm•A•Syst animal waste land application features	Management of animal waste land application can be ranked on each of these features.
75	Overall farm ranking	The total farm evaluation score indicates the overall level of water quality protection provided by the farm management and site conditions in the areas evaluated. Specific features with low scores can be the focus of efforts to improve water quality protection. The x's on this grid illustrate the kind of evaluation summary that can be made.
76	Conditions and improvements	Site conditions can be evaluated and plans developed to address areas for priority attention to reduce the potential of polluting ground and surface water. Realistic timing of the changes can be an important part of a successful plan.
77	Confidentiality	Pennsylvania Farm•A•Syst—Farm Evaluation System—is a voluntary effort. It is not the intention of this educational program to keep records of individual results. However, the landowner may share them with others who can help develop a resource management plan. The materials are available from local Conservation Districts, Penn State Cooperative Extension, and USDA NRCS.

No. Identification	Description
78 Project coordinators	Coordinators for Pennsylvania Farm•A•Syst are: Barry Frantz, USDA NRCS and Pennsylvania Association of Conservation Districts, Les Lanyon, Penn State Department of Crop and Soil Sciences and Cooperative Extension, and Jerry Martin, Penn State Cooperative Extension.
79 Support	Support for this program was provided by: Pennsylvania Department of Environmental Protection 319(h) Program, Chesapeake Bay Program, and USDA Special Project No.91-EHUA-1-0061.
80 Authors	Slide set developed by Penn State Cooperative Extension with additional slides from the national Farm•A•Syst office and Frank Lucas of the USDA-NRCS.

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