INTRODUCTION

Each and every farming operation we see as we travel across Bradford County is a reflection of the objectives and management skills of the individuals that are proud to call themselves farmers. Farming in today’s world encompasses the elements of agronomy, soils science, animal husbandry, fiscal management, personnel management, environmental science, and a host of other disciplines and influences. The farmer must balance his or her values along with the needs of the operation, the family’s needs, community’s needs and the environment’s needs.

There are a host of resources and resource people willing and able to lend their assistance and knowledge to assist the farmer in making some of those critical management decisions. One of the most valuable of these resources are the farmers themselves. The community of farmers that make up the agricultural operations of Bradford County share the common resource base, the climate and the market conditions. Each of them approaches the challenges of farming in their own way to make or break the success of their individual operation.

This guide is a compilation of farmer resources that are available to share their experiences in developing and managing best management practices (bmps) for addressing environmental issues related to farming operations in Bradford County. It is recognized by the many agencies and individuals that provide technical assistance to farmers that the practices they discuss, plan and eventually implement must fit in with the management time and needs that the farmer has. While those resource agency people can best explain the practice function and design, there is no better source of management information than those that have been working with the practices themselves. The individuals listed here have offered to discuss those operational and management issues with other farmers seeking such information. This publication is meant as a supplement to the planning efforts of those resource people and their efforts.

This guide is meant to be a local supplement to such publications as the PA Technical Guide and A Conservation Catalog as well as other available publications and guides.

ACKNOWLEDGEMENTS

The Bradford County Conservation District wishes to gratefully acknowledge the contributions of those farmers featured within this book. They have generously agreed to share their experiences with others to not only help the future of farming in Bradford County, but also maintain and improve the quality of the environment that is shared by all who live, work, and visit.

We also wish to thank Dick Allyn for the work on taking the photographs shown here and all the others that have provided assistance and review of this work.

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Publication layout and design by Danille Turissini, M-BRS Research and Consulting Services, Towanda, PA.

For information and/or assistance, please contact the Bradford County Conservation District by calling (570) 265-5539 ext. 6.
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**BRADFORD CO. FARM LOCATOR MAP** ....... Back Cover
Barnyards are critical areas for any livestock producer that is not a total confinement system. Providing a stable area that facilitates animal health, ease in maintenance, and avoids water quality impacts is a goal every farmer has.

**THE PRINCIPLES INVOLVED IN GOOD BARNYARD DESIGN AND CONSTRUCTION INCLUDE:**

1. Keeping clean water clean by eliminating it from entering the barnyard
2. Sizing and adjusting the barnyard for the type and frequency of use
3. Providing a durable, yet livestock friendly, surface for livestock, vehicles and maintenance
4. Directing runoff from the barnyard area to storage of treatment
5. Providing for a maintenance plan

**COMPONENTS OF BARNYARD SYSTEMS USUALLY INCLUDE THE FOLLOWING:**

1. A diversion to direct uphill water from entering the barnyard area
2. Roof runoff collection and diversion from the barnyard area
3. Sizing and reinforcement of the barnyard
4. Collection of runoff from the actual barnyard to a storage or treatment area

**THE FOLLOWING FARMS ARE FEATURED IN THIS SECTION:**

**DAN ABELL**
- Screen Residue after Rain

**JOHN ALLFORD**
- Screen Box

**JAMES HEPP**
- Barnyard Runoff Control
- Roof Gutters
- Barnyard System

**JON and JEFF JENKINS**
- Drip Trench/Rock under Roof Eaves

**MILT SHERMAN**
- Gravel Exercise Lot with Cattle Lane

**BOB JENNINGS**
- Pipe and Grass Filter

**KEN WALTER**
- Gravel Barnyard

(Return to Table)
SCREEN RESIDUE AFTER RAIN

SCREEN BOX AND OUTLET TO FILTER AREA (MAGNIFIED BELOW)
BARNYARDS

BARNYARD SYSTEM AND RUNOFF CONTROL

ROOF GUTTERS (MAGNIFIED BELOW)
JON AND JEFF JENKINS

DRIP TRENCH/ROCK UNDER ROOF EAVES

BOB JENNINGS

PIPE AND GRASS FILTER
BARNYARDS

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(RETURN TO TABLE)

MILT

SHERMAN

GRAVEL EXERCISE LOT WITH CATTLE LANE

(RETURN TO TABLE)

KEN

WALTER

GRAVEL BARNYARD
Contour farming involves tilling, planting, and harvesting operations around the hill or slope as near to the contour as practical. Tillage crops are interspersed with grass or forage crops. The purpose of this practice is to slow down the water running across the field and to intercept any top soil leaving the row crop areas. This practice reduces runoff, increases soil moisture and decreases soil erosion.

**THE PRINCIPLES INVOLVED IN CONTOUR STRIP FARMING INCLUDE:**

1. Farming as near to the contour of the hill or slope as possible
2. Inter-spacing row crop strips with hay or forage crop strips to minimize runoff

**COMPONENTS OF CONTOUR STRIP CROPPING INCLUDE:**

1. Design and layout of widths and slopes of strips
2. Crop rotations that alternate to maintain the integrity of the contour strips
Diversions are commonly used by many County farmers to help break up the long slopes where crops are raised or to keep water away from high use areas such as farmsteads or animal concentration areas. They reduce the rate of runoff and minimize soil erosion. They are cross slope structures that are permanently vegetated and outlet into a stable area.

**THE PRINCIPLES INVOLVED IN THE DESIGN AND CONSTRUCTION OF DIVERSSIONS INCLUDE:**

1. Sizing and designing a diversion for the amount of water draining into it
2. Constructing and stabilizing the channel to minimize any erosion that may result from the water flow
3. Assuring a stable outlet for the end of the diversion
4. Maintaining the diversion to maximize proper vegetative cover

**COMPONENTS OF DIVERSSIONS INCLUDE:**

1. Proper sizing and design
2. Selection of vegetative cover and its establishment
3. Assuring a stable outlet
4. A maintenance plan
Grassed waterways collect the water from the farm fields and barn areas and convey it to a stable outlet in a way that prevents channel erosion. Such waterways are designed to carry the flows that the areas draining into them create. They help improve water quality, reduce erosion and provide a stable outlet for diversions, terraces and other water collection sources.

THE PRINCIPLES INVOLVED IN THE DESIGN AND CONSTRUCTION OF GRASSED WATERWAYS INCLUDE:

1. Sizing and designing a waterway for the amount of water draining into it
2. Constructing and stabilizing the channel to minimize any erosion that may result from the water flows
3. Assuring or establishing a stable outlet
4. Maintaining the waterway to maximize proper vegetative cover

COMPONENTS OF GRASSED WATERWAYS USUALLY INCLUDE THE FOLLOWING:

1. Proper sizing and design
2. Selection of vegetative cover and its establishment
3. Stable outlet
4. A maintenance plan
A well managed grazing system maximizes forage potential, efficiently utilizes fields where soils may not be suitable for row crops, minimizes soil and nutrient pollution, encourages animal health and can provide good economic return.

**THE PRINCIPLES INVOLVED IN THE DESIGN, CONSTRUCTION, AND MAINTENANCE OF A GRAZING SYSTEM INCLUDE:**

1. Design and tailor paddock size for the animal types and herd size so that rotations maximize forage health and efficiency and considers water quality
2. Utilizes forage species that meet animal and farm management needs
3. Provides a dependable source of drinking water

**COMPONENTS OF A GRAZING SYSTEM INCLUDE:**

1. Fencing layout
2. Vegetation selection
3. Watering system
4. Access lane or alleys
5. Maintenance

**THE FOLLOWING FARMS ARE FEATURED IN THIS SECTION:**

**RAYMOND HOPPAUGH**
- Grazing System – Paddock Layout

**DALE NEUFELD**
- Solar Panels for Water Pump
SOLAR PANELS 
FOR WATER 
PUMP

Dale Neufeld
MANURE STORAGE

For those farmers that have need to store manure during winter months in order to reduce nutrient discharge into the surrounding water, manure storage is a significant management and financial commitment. Storage structures can be as simple as a stacking area and go on to complexity involving earthen storage, concrete, or steel structures. Storage allows for a more efficient utilization of the manure nutrients for the operator, helps protect water quality, improves animal health and can improve aesthetics of a farming operation. Manure structures should be installed as a component of a comprehensive farm-specific nutrient management plan.

THE PRINCIPLES INVOLVED IN MANURE STORAGE DESIGN, CONSTRUCTION AND MANAGEMENT INCLUDE:

1. Matching the site and environmental conditions to the appropriate structure
2. Designing and constructing a storage facility that meets good engineering and environmental standards and matches the farmers management needs
3. Sizing for needed storage duration
4. Eliminating any possible surface or ground water intrusion
5. Providing adequate safety protection
6. Developing a proper maintenance plan

COMPONENTS OF A MANURE STORAGE SYSTEM USUALLY INCLUDES:

1. Site evaluation and selection of structure type
2. Proper sizing and design based on a nutrient/manure management plan
3. Collection and transfer of manure from the livestock areas
4. Surface and groundwater collection and diversion
5. Storage structure
6. Unloading structures
7. Safety facilities and emergency contingency plans

THE FOLLOWING FARMS ARE FEATURED IN THIS SECTION:

JAY GOOD
- Slatted Floor Manure Handling

BEN and DEAN JACKSON
- Manure Agitation Pump

BOB JENNINGS
- Earthen Manure Storage Pond

RON KLINE
- Concrete Manure Storage Tank

JIM MADIGAN
- Barnyard to Concrete and Steel Storage Tanks
- Twin Agitation Pumps

BOB RATHBUN
- Steel Manure Storage Tank

DOUG and VICKIE WILBUR
- Concrete Manure Storage Tank

BOB WOLPERT
- Manure Stacking Pad
SLATTED FLOOR
MANURE HANDLING

BEN AND DEAN
JACKSON
MANURE AGITATION PUMP
Earthman Manure Storage Pond

Concrete Dairy Manure Storage Tank
MANURE STORAGE

BARNYARD TO CONCRETE, STEEL STORAGE TANKS, AND TWIN AGITATION PUMPS

BOB
RATHBUN
STEEL VEAL MANURE STORAGE TANK
MANURE STORAGE

CONCRETE VEAL MANURE STORAGE TANK

MANURE STACKING PAD

DOUG AND VICKIE WILBER

BOB WOLPERT
Providing a clean environment in and around the milk house is critical. This usually entails a good drainage system in the milk house which drains to some type of collection system for later utilization or disposal. Milk house waste can be legally utilized on cropping areas, either as part of the nutrient management plan disposal strategy or as part of a grass filter system.

THE PRINCIPLES INVOLVED IN MILK HOUSE WASTE MANAGEMENT DESIGN, CONSTRUCTION AND MANAGEMENT INCLUDE:

1. Matching the site conditions and the management styles of the farmer with a collection and storage system as well as a disposal/utilization plan
2. Designing and constructing a collection, transfer and storage system
3. Developing a proper maintenance plan

COMPONENTS OF A MILK HOUSE WASTE SYSTEM INCLUDE:

1. Site evaluation and selection of approach
2. Proper sizing and design
3. Construction

THE FOLLOWING FARMS ARE FEATURED IN THIS SECTION:

BOB TAYLOR
- Milk House Storage Tanks
- Milk House Pipe to Spreader

BOB JENNINGS
- Milk House Waste Distribution Pipe and Grass Filter

BRIAN HARRIS
- Irrigation of Milkhouse Waste and Manure Storage Runoff
PESTICIDE HANDLING SYSTEMS

Pesticide handling systems are designed to allow farmers to safely fill and mix agri-chemicals for field application. The system is designed to handle any type of emergency spill or overflow while preparing materials, as well as to recycle rinse water from the handling tanks, thus protecting water quality from contaminated runoff.

THE PRINCIPLES INVOLVED IN THE DESIGN AND CONSTRUCTION OF A PESTICIDE HANDLING SYSTEM INCLUDE:

1. Sizing and designing a system that takes maximum equipment capacity into consideration
2. Sizing and designing a system that directs all spillage and overflow to a self-contained storage that can easily be pumped
3. Design allows clean rainwater to bypass the system
4. The system considers the safe storage of agri-chemicals

COMPONENTS OF A PESTICIDE HANDLING SYSTEM INCLUDE:

1. Proper sizing and design
2. Proper storage for spills, runoff and for agri-chemicals stored on-site
3. Perimeter controls to divert surface runoff from entering the mixing site
4. Emergency wash facilities
5. Safety controls for access and proper signage
Streams and their banks are critical areas as an interface between the farm and the environment. The proper management of these areas can help protect and enhance water quality, wildlife habitat and the farm’s fields. Streams and their immediate borders, called riparian areas, can do much to filter runoff and stabilize banks. In areas where the stream banks are eroding, structural, vegetative or management approaches are used to correct the unstable conditions.

THE PRINCIPLES INVOLVED IN THE DESIGN AND CONSTRUCTION OF STREAM STABILITY INCLUDE:

1. Managing riparian areas to avoid disturbance by livestock or tillage
2. Restoring eroding stream banks through vegetative, structural or both approaches
3. Establishing controlled access to streams
4. Maintenance of stream riparian areas

COMPONENTS OF STREAM BANK PROTECTION MAY INCLUDE:

1. Assessment of restoration needs
2. Selection of restoration practices to include but not limited to:
   • Livestock exclusionary fencing
   • Structural bank protection sizing, design and installation
   • Vegetative bank protection design and installation
   • Stabilized stream crossings sizing, design and installation
   • Alternative livestock watering design and installation

THE FOLLOWING FARMS ARE FEATURED IN THIS SECTION:

**BENTLEY CREEK**
- Rock Structures in Stream Channel

**CONRAD CARLSEN**
- Stream Bank Fencing

**MARK CARTER**
- Gravel Stream Crossing

**BEN and DEAN JACKSON**
- Stream Crossing

**RT. 6 BRIDGE OVER SUGAR CREEK** (West of Towanda on Route 6)
- Rock Rip-rap on Stream Banks

**GERALD TWIGG**
- Riparian Forest Buffer
STREAM BANK PROTECTION

BENTLEY CREEK

ROCK STRUCTURES IN STREAM CHANNEL

CONRAD CARLSEN

STREAM BANK FENCING

(Return to Table)
ROUTE 6 BRIDGE OVER SUGAR CREEK

ROCK RIP-RAP ON STREAM BANKS (West of Towanda)

GERALD TWIGG

RIPARIAN FOREST BUFFER
Any farmer in the Bradford County area is familiar with the traditional methods of applying the nutrients related to animal manures, wash water and barnyard runoff. There are a number of methods that involve calculating and matching these nutrients to grass and forage filter areas. These areas are sized to assure that any runoff leaving them is clean enough to enter the surrounding environment.

THE PRINCIPLES INVOLVED IN DESIGNING AND CONSTRUCTING THESE AREAS INCLUDE:

1. Determining the amount and nutrient content of the waste being handled
2. Sizing and establishing a vegetative or crop area that would efficiently utilize all available nutrients so as to avoid water quality impacts
3. Sizing and designing a distribution system appropriate to the management needs of the farm

COMPONENTS OF WASTE DISTRIBUTION / FILTRATION SYSTEM INCLUDE:

1. Sizing, design and installation of a temporary storage system that may include solids separation
2. Sizing, designing and construction of a transfer system
3. Sizing, designing of a vegetative area for the receiving of the material
4. Maintenance plan for the system and vegetative area
BRADFORD COUNTY FARMER'S RESOURCE GUIDE

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BRADFORD COUNTY FARMER CONTACTS

Abell, Dan - BEEF
RR 1 Box 556
Warren Center, PA 18851
(570) 395-3647
• Screen residue after rain
• Concrete barnyard

Allford, John - DAIRY
RR 1 Box 46
Milan, PA 18831
(570) 596-2470
• Screen box
• Concrete barnyard

Barrett, Jim - DAIRY
RR 4 Box 179
Towanda, PA 18848
(570) 265-8887
• Manure irrigation
• Earthen manure storage

Beardslee, Roy and Tim - DAIRY
RD 2 Box 239
Columbia Cross Roads, PA 16914
Roy-(570) 297-2835
Tim-(570) 297-2828
• Pesticide handling system
• Contour Strips

Bradford Co. Conservation District - Bentley Creek
Bradford County Conservation District
RR 5 Box 5030C
Towanda, PA 18848
265-5539 Ext. 6
• Stream Protection

Carlson, Conrad - DAIRY
RR 1 Box 108
Rome, PA 18837
(570) 247-2896
• Stream bank fencing
• Concrete barnyard
• Earthen manure storage

Carter, Mark - DAIRY
RR 3 Box 111
Troy, PA 16947
(570) 297-4048
• Stream crossing (gravel)

Ferguson, Bob - BEEF
RR 2 Box 84
Canton, PA 17724
(570) 673-8212
• Concrete barnyard
• Filter channel

George, John
RR 1 Box 200B
Rome, PA 18837
(570) 247-2066
• Grassed waterway
• Diversion

Good, Jay - DAIRY
RD 2 Box 102
Canton, PA 17724
(570) 673-3594
• Slatted floor manure storage
• Concrete stream crossing

Hepp, James - DAIRY
RR 3 Box 42
Wyaliung, PA 18853
(570) 746-1651
• Waste stacking area
• Barnyard runoff control
• Concrete barnyard
• Roof gutters

Hopkough, Raymond - DAIRY
RR 2 Box 165
Columbia Cross Roads, PA 16914
(570) 596-2532
• Stream bank fencing
• Grazing system

Jackson, Ben and Dean - DAIRY
RR 2 Box 241
Columbia Cross Roads, PA 16914
(570) 297-2838
• Culvert stream crossing
• Manure agitation pump
• Diversion
• Contour strips

Jenkins, Jon and Jeff - DAIRY
RD 2 Box 260
Columbia Cross Roads, PA 16914
• Drip trench – rock under roof eaves.
• Gravel barnyard
• Diversions

Jennings, Bob - DAIRY
RR 1 Box 82A
Canton, PA 17724
(570) 673-4350
• Earthen manure storage
• Milk house waste treatment in grass filter
• Pipe and Grass Filter

Kline, Ron - DAIRY
RR 2 Box 341
Troy, PA 16947
(570) 297-3236
• Contour strips
• Concrete manure storage
• Earthen manure storage
• Manure Agitation pump

Madigan, Dean - HEIFERS
RD 3 Box 149
Towanda, PA 18848
(570) 265-3799
• Grazing system

Madigan, Jim - DAIRY
RR 3 Box 140
Towanda, PA 18848
(570) 265-3822
• Concrete and steel manure storage
• Manure agitation pumps
Shores, Scott - DAIRY  
RR 5 Box 5240  
Towanda, PA  18848  
(570) 265-9033
• Slatted floor manure collection

Taylor, Bob - DAIRY  
RR 1 Box 188  
Rome, PA  18837  
(570) 247-7551
• Milk house waste to spreader

Twigg, Gerald - DAIRY  
RR 1 Box 135  
Sayre, PA  18840  
(570) 247-7959
• Riparian forest buffer

VanBlarcom, Jim - DAIRY  
RR 2  
Columbia Cross Roads, PA  
(570) 297-3866
• Pesticide handling system
• Slatted floor manure
• Earthen manure storage

Walter, Ken - DAIRY  
RD 1 Box 7  
Milan, PA  18831  
(570) 888-9742
• Gravel barnyard

Wilber, Doug & Vickie - VEAL  
RR 1 Box 239  
Roaring Branch, PA  17765  
(570) 673-3884
• Concrete veal manure storage

Wolpert, Bob - HORSE  
RR 1 Box 76  
Athens, PA  18810  
(570) 888-6959
• Manure stacking pad

If you would like to have your name added to the Bradford County Farmer-Contact Guide, please contact the Bradford County Conservation District at (570) 265-5539, ext. 6.
### BRADFORD COUNTY FARMER PRACTICES

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(RETURN TO TABLE)
## BRADFORD COUNTY FARMER PRACTICES

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