Best Management Practices (BMP) for Water Quality

How Land Treatment Can Protect Water Quality?

Best Management Practices (BMP) for Water Quality

- "Non Point Source (NPS) pollution from agriculture is the leading source of impairments to surveyed rivers and lakes"

  USEPA Clean Water Action Plan, 1998

Best Management Practices (BMP) for Water Quality

Three Leading Sources of Water Quality Impairment

Rank	Rivers	Lakes	Estuaries
1	Agricultural	Agricultural	Urban runoff
2	Municipal point sources	Municipal point sources	Municipal point sources
3	Stream/ habitat changes	Urban runoff	Agricultural

Best Management Practices (BMP) for Water Quality

- Sources of Agricultural NPS Pollution
  - Sedimentation
  - Nutrients
  - Pesticides

Best Management Practices (BMP) for Water Quality

- Environmental Risk Assessment Tools
  - N - Leaching Index
  - Phosphorus Index
  - RUSLE2
  - EPA 303(d) report
  - WIN-PST
  - NAPRA

Characteristics of the material applied affect the contamination potential

Characteristics of the material applied:	Ground Water Contamination Potential is:
Water solubility is **Low**	**Low**
Water solubility is **High**	**High**
Soil adsorption is **High**	**Low**
Soil adsorption is **Low**	**High**
Persistence is **Short**	**Low**
Persistence is **Long**	**High**

Characteristics of the material applied affect the contamination potential

Soil Characteristic	Groundwater Contamination Potential is Low	Groundwater Contamination Potential is High
Clayey	x	
Sandy		x
Low Organic Matter		x
High Organic Matter	x	
Small Macropores	x	
Large Macropores		x
Groundwater deep >100’	x	
Groundwater shallow <20’		x

Pesticide Rating of Potential for off-site movement

Pesticide	Runoff	Leaching
Alachlor (Lasso)	*medium*	*medium*
Atrazine (Aatrex)	*medium*	*medium*
Permethrin (Ambush, Pounce)	*large*	*small*

Best Management Practices for Water Quality

Definition:

Best Management Practices (BMPs) for protection of water quality are practices which reduce the potential for contaminants moving into water either by surface runoff or by leaching into groundwater

Best Management Practices for Water Quality

- The land treatment component of a Comprehensive Nutrient Management Plan (CNMP) in Texas is comprised of a set site specific BMPs selected from the suite of practices in the TX NRCS Field Office Technical Guide, Section IV, which address the resource concerns of the producer, the land, and the regulatory community.

Land Treatment Practices for Water Quality

Conservation Buffers

- Alley Cropping
- Contour Buffer strips
- Cross Wind Trap Strips
- Field Borders
- Filter Strips
- Grassed Waterways
- Herbaceous Wind Barriers
- Riparian Forest Buffers
- Vegetative Barriers
- Windbreaks/shelterbelts

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Land Treatment Practices for Water Quality

Residue Management

- No Till and Strip Till
- Mulch Till
- Ridge Till
- Seasonal

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- Mulch Till
- Ridge Till
- Seasonal – Maintaining "X" amount of residue until a given date.

Land Treatment Practices for Water Quality

BMPs for Dry Cropland

- Conservation Crop Rotation
- Residue Management
- Waste Utilization
- Nutrient Management
- Conservation Buffers
- Pest Management
- Terraces
- Contour Farming
- Grassed Waterway

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Land Treatment Practices for Water Quality

Additional BMPs for Irrigated Cropland

- Precision Land Leveling
- Irrigation Water Management
- Conservation Crop Rotation
- Residue Management
- Conservation Buffers
- Nutrient Management
- Waste Utilization
- Pest Management

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Land Treatment Practices for Water Quality

BMPs for Grazing Land

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- Water Source
- Conservation Buffers
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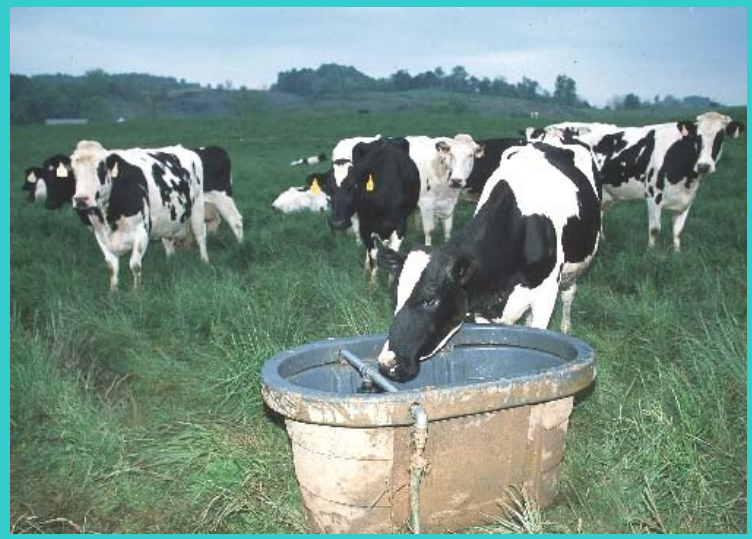

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Land Treatment Practices for Water Quality

Benefits of applying BMPs

Reduced :

- Soil Erosion
- Sediment yield
- Water turbidity
- Loss of sediment adsorbed nutrients and pesticides
- Rainfall runoff

Land Treatment Practices for Water Quality

Benefits of applying BMPs

Improved:

- Wildlife habitat
- Dissolved oxygen in water
- Visual resources
- Soil tilth
- Soil organic matter
- Water holding capacity
- Water infiltration
- Moisture conservation