

# Manure and Mud Management

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# What we'll cover...

- Benefits of Manure and Mud Management
- Different practices and possibilities
- Resources for assistance



# Good reasons for M&M Mgmt

- Get a handle on the “mud”
- Benefits to the animals
- Environmental protection
- Pasture Improvements



# Cost of Mud: Animal

- The effect of rain, wind, and mud on feedlot cattle performance

Treatment	Initial weight	ADG	Feed intake	Feed gain
Concrete, wind, rain	648	2.77	22.2	8.01
Concrete, wind	634	3.23	20.8	6.44
Concrete, shelter	654	3.44	22.0	6.44
Mud, shelter	658	2.67	20.0	7.49
Mud, wind	625	2.47	19.7	7.97

From 9th California Feeders' Day, 1969, University of California

# Cost of Mud: Animal

## ➤ Gain in mud

<b>Risk potential caused by mud</b>	
<b>Mud Depth</b>	<b>Potential Loss of Gain</b>
No mud	0%
Dewclaw-deep	7%
Shin-deep	14%
Below hock	21%
Hock-deep	28%
Belly-deep	35%

*Source: Kansas State University, University of Nebraska*

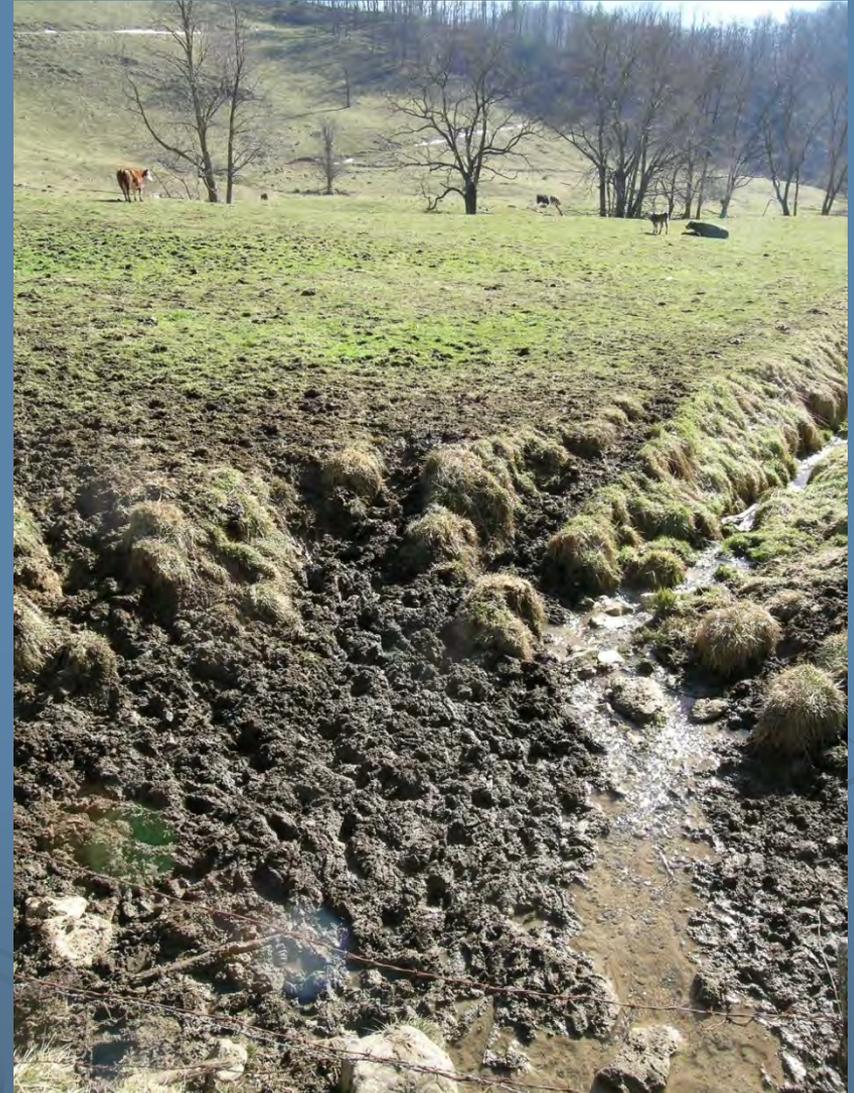
## ➤ Calf Scours

- Calf
- Udders

## ➤ Scald leading to footrot

# Cost of M & M: Environment

- Sediment
- Bacteria
- Flowing to streams



# Sacrifice Area

- Small area that is going to be “sacrificed” to save the rest of the pastures
- Choose a smart location—close to barn, feeding area, etc...
  - Rocky, hillside area, low productivity
- Over seed annual ryegrass in spring





# Improved Sacrifice Area

- Site is prepared for heavy use
- Scrape away accumulated manure, mud and organic material
- If possible, gently slope the land, 1 to 2 % away from barn



# Popular Footing Options:

## ➤ Hog fuel

- Wood chips, shredded bark, fairly inexpensive, packs down and decomposes, 6" minimum, 12" is better. Decomposes with time. Add a new layer every 1 -2 years

## ➤ Gravel

- 6 to 8". Larger gravel (3" minus, possible pit run) for base, with  $\frac{3}{4}$ " minus on top

## ➤ General rule of thumb

Min. of 2:1 ratio of footing to mud



# Where'd the gravel go?

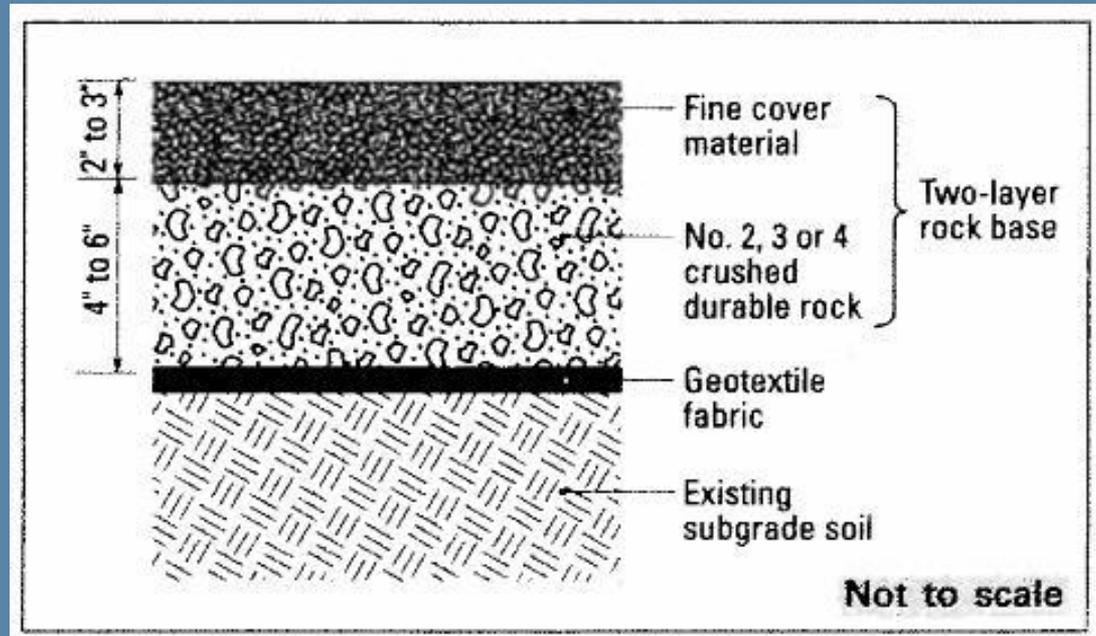


# Geotextile Fabrics

- Synthetic material, filter fabric
- Small holes so that water can pass through, but not soil particles
- Soil stability and load distribution
- Provides separation
  - Prevents the base material from mixing with the footing material



# Rock & Geotextile Fabric Specs



- Details in “Using All-Weather Geotextile Lanes and Pads” (MWPS, AED-45)
- <http://www.mwps.org/>
- Select “Construction on the farm”



# Exercise Area



Protect the pasture:  
Fence off a “run” or “track”  
for exercising horses. Use  
pasture carefully.

# Other Heavy Use Areas

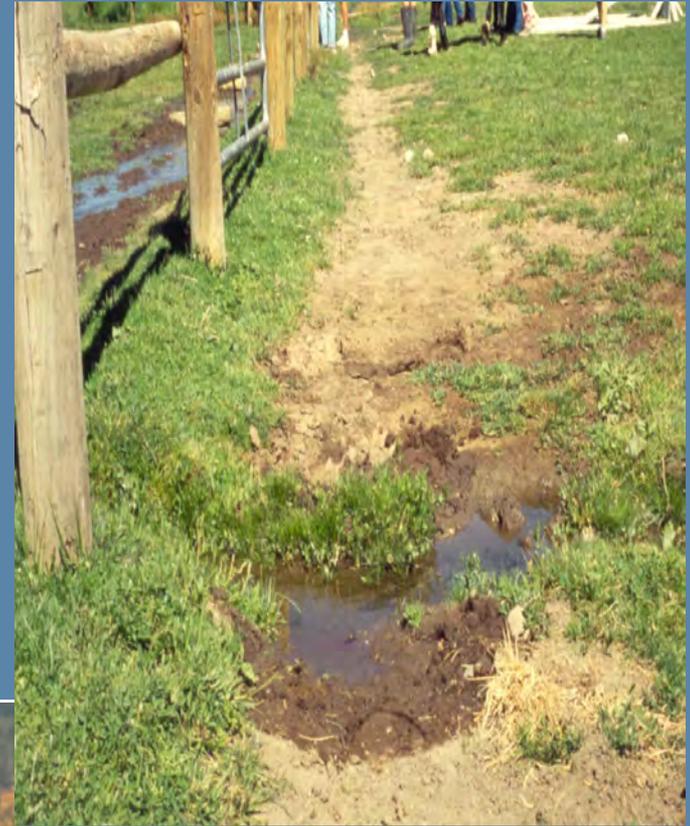
- Area around
  - water troughs
  - gates
  - barn



# Animal Walkways

## ➤ Prevent

- Compacted soil in summer
- Mud in the winter



# Portable Feeding Area

- Reduce mud and manure accumulating in any one place
- Place feeding area away from water resources



# Keep “Clean” Water Clean

- Divert water drainage away from your barn and sacrifice areas
  - Use berms to create a physical barrier
  - Water bars (speed bumps)
  - Drain tiles
- Caution: Divert only clean water. Waste water diversion requires a permit



# Tools To Divert Water

- Drain Tile
- Drainage Ditch
- Culverts
- Caution: Rules and Regs



# Rain Gutters and Downspouts

## ➤ The Problem

- 1" of rain on a 20'x50' barn roof produces 620 gallons of water.
- 40" of rain per year
- 25,000 gallons of extra water !



# Rain Gutters and Downspouts

- Install gutters and downspouts on roofs that contribute to the mud problem.
- Be sure to direct the downspouts away from sacrifice areas.
- Protect the downspouts from damage.





# Keeping Water Clean

- Use vegetation and fencing to protect sensitive areas
  - Grass waterways and buffer strips
  - Use plants to utilize water
    - Willows, cottonwoods, red-osier dogwood



# Fencing

- Sensitive areas like streams and rivers
- Around the wellhead





# Using Riparian Areas

- Unused/unmanaged areas revert to weeds
  - Use appropriate weed control
- Make riparian pastures
- See Handouts
  - Graze at appropriate time
  - Graze at appropriate intensity

Well-head fenced off

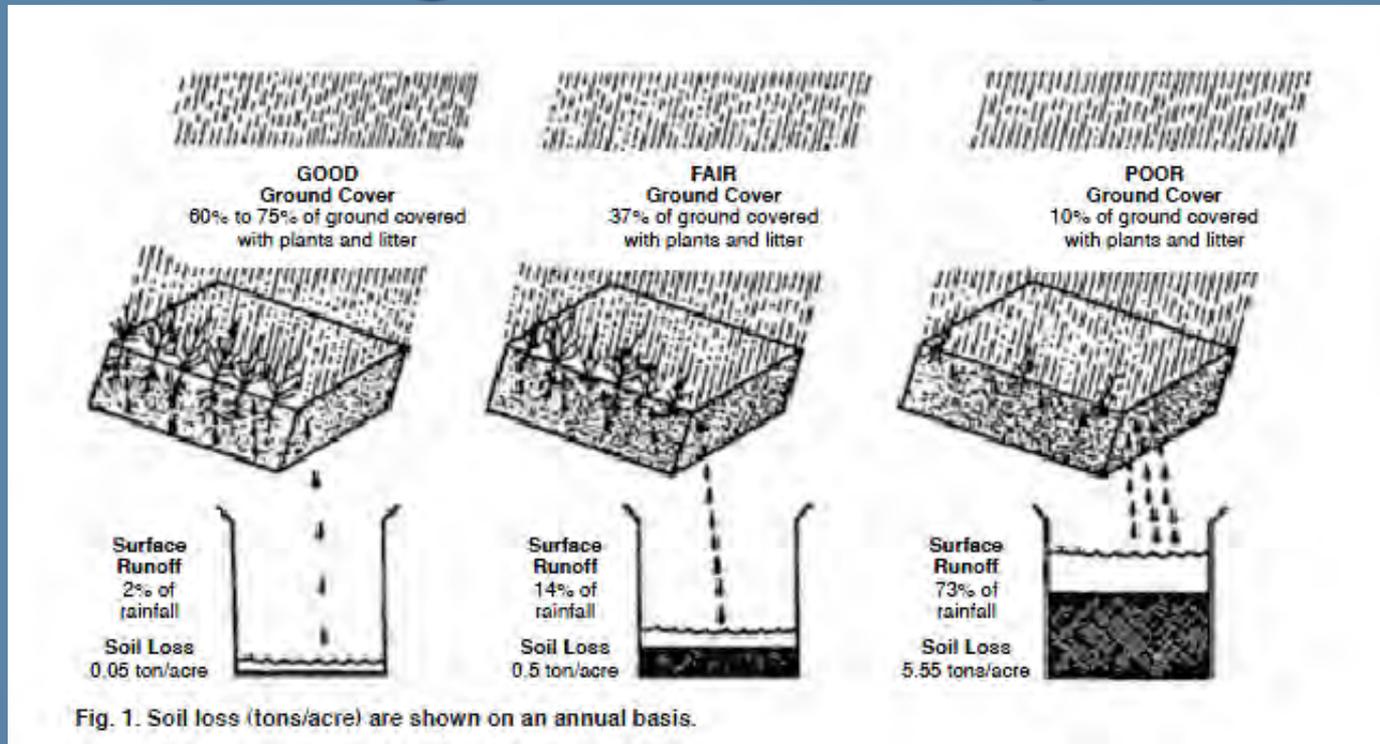


# Buffer Strips

- Grass and/or other vegetation
  - Adsorbs excess nutrients
  - Catches sediment
- Down slope of heavy use areas
- Along streams and other waterways
- Around wellheads



# Vegetative Strips



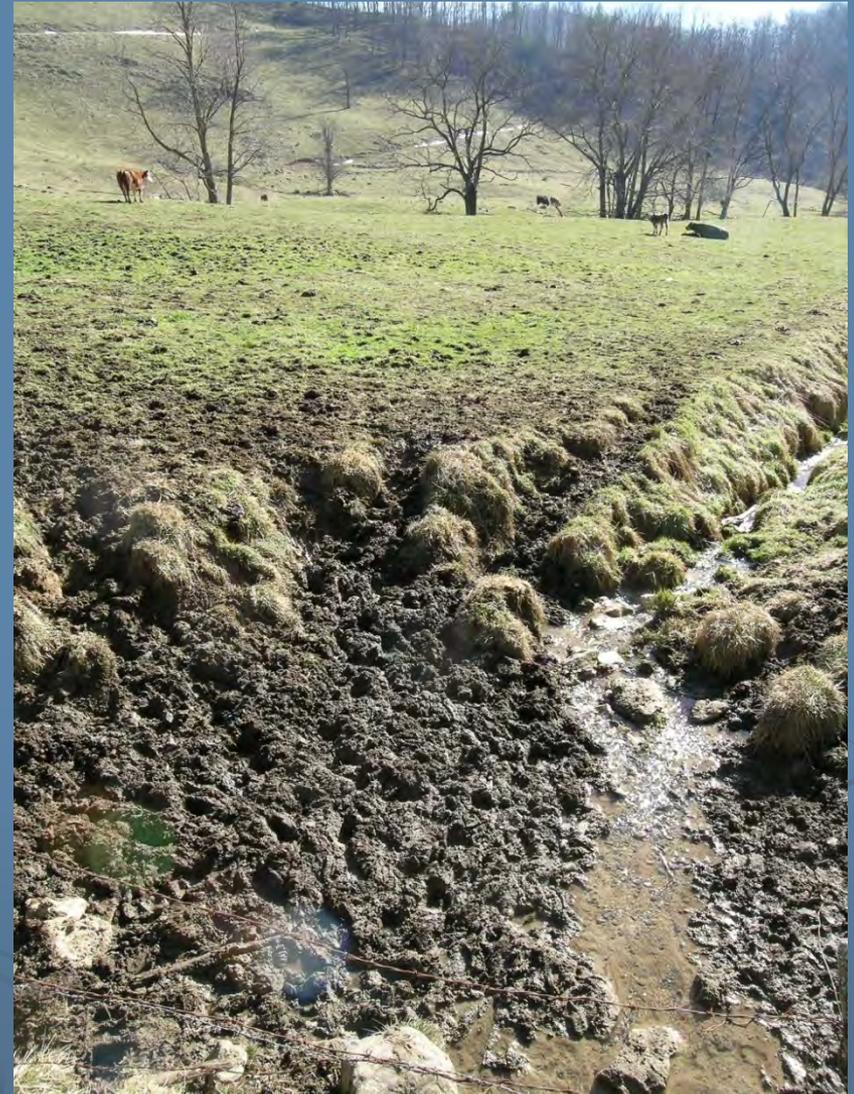
Slope	Length of flow
(%)	(ft)
0 to 3	30
3 to 8	50
over 8	100
Critical landscape feature	100

What practices would be good here?



# Off Stream Watering

- Reduces stream bank erosion
- Keep your soil!
- Helps prevent bacteria and nutrient contamination in water
- Provides clean water for animals



# Not Good!



# Better!



# Even Better!



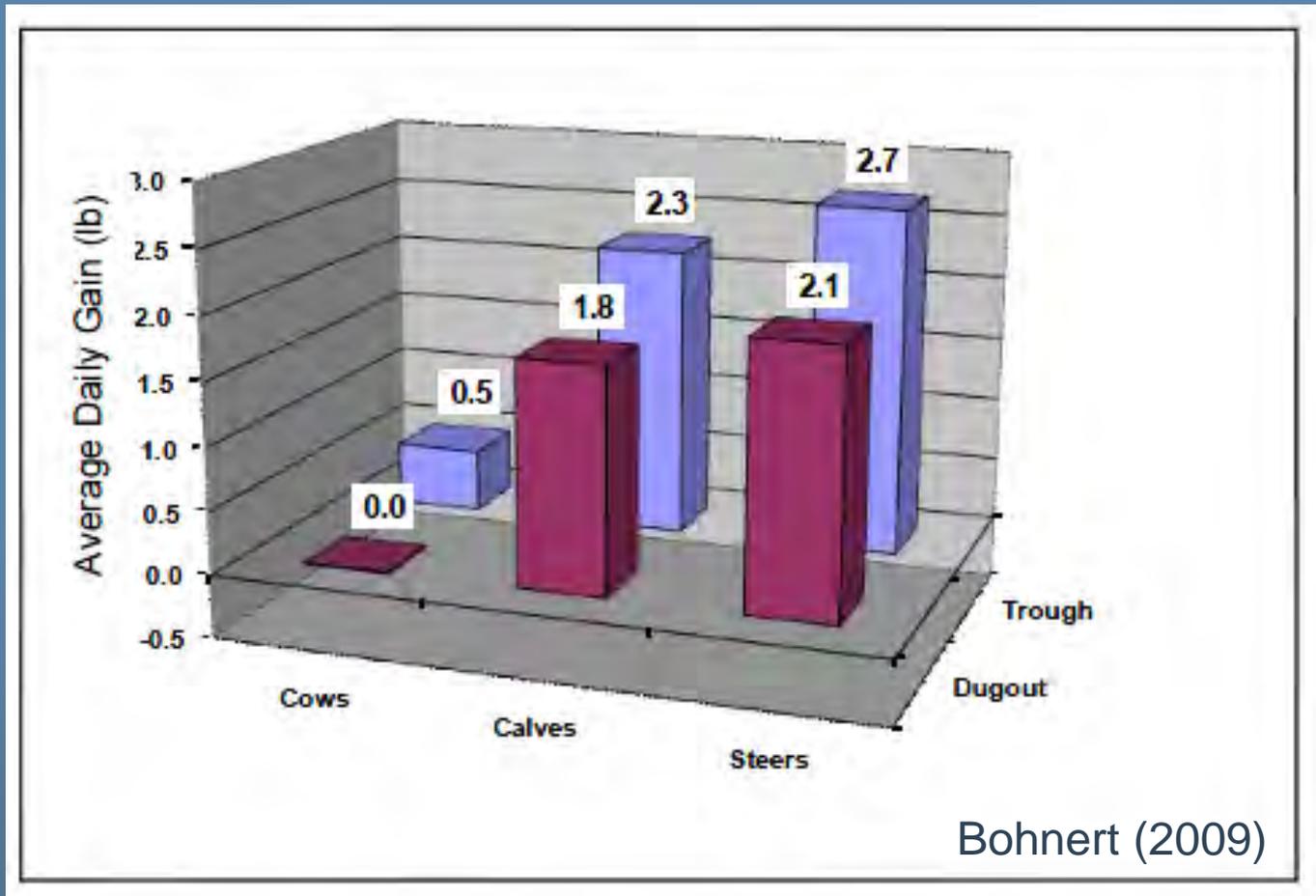
See handout on “Livestock Watering Alternatives”

# Put the cattle to work--



Cattle learn to use the nose pump to get water.

# Average daily gain: Dugout versus trough water



# Collect and Store Manure

- Not just behind the barn!
- Find a “safe” place
  - Area away from water
  - Compacted gravel area
  - Concrete pad
  - Covered storage facility



# Cover Manure Pile

- Cover pile during the rainy season
  - Prevents nitrate-nitrogen from leaching to drinking/groundwater.
  - Prevents bacteria from contaminating water





Composting can  
kill parasites and weed seeds



See Publications:

Manure and Compost Facilities

Composting (OSUES - EM 8825)

Composting Livestock Manure (WSU)

# Utilize Manure Resources

- Applying manure increases soil nutrient value and organic content
- Apply when plants can use it
  - Unsaturated soils
  - Growing weather
- Buffer from water
- Away from natural drainages



# Low Cost Fertilizer!



- Cattle manure is a good source of Phosphorus

# Fertilizer Value

- Manure Source (animal type)
- Storage conditions
- Application technique
  
- See publications
  - Fertilizers and Lime Materials (FG 52)
  - Fertilizing with Manure and Other Organic Amendments (EM533)

# Soil Fertility Status

Current

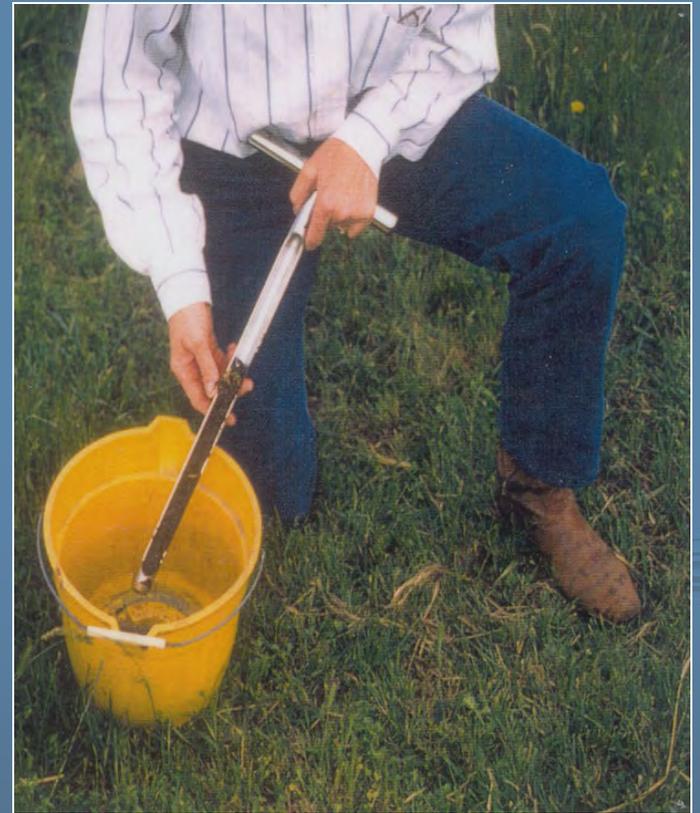


Required



# Soil Testing

- How to take a soil sample
- List of Laboratories
- OSU Fertilizer Guides
- Consultations by OSU





# Need some assistance?

- Local Extension service
- For cost-sharing and technical assistance
  - Soil and Water Conservation District (SWCD)
  - Natural Resource Conservation Service (NRCS)



# QUESTIONS?



# Publications

- <https://extension.oregonstate.edu/crop-production/pastures-forages>
- <http://pubs.cahnrs.wsu.edu/learn/>