Dairies to Berries: How to Effectively Use Manure Without Causing Pollution Issues

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SMALL FRUIT CONFERENCE  DECEMBER 1, 2016
Pollution Issues in Western Washington

- **Surface Water**
  - Sediment – Soil
  - Nutrients – Fertilizer, manure
  - Chemicals – Sprays and granular
  - **Pathogens – Manure, human, natural**

- **Groundwater**
  - Nitrate – Fertilizer, manure
  - Other
When is Manure Used in Berry

- Field renovation
- In-season fertilizer
- Mulch replacement
What Causes a Pollution Issue?

**Pollutant availability**  
- Applied, variable uptake/conversion

**Improper application practices**  
- Timing, method, rates

**Weather events**  
- Precipitation, flooding, high water table, wind

**Poor field conditions**  
- Soil type, slope, surface cover, saturated soils
4 R’s of Nutrient Management

- Right Time
- Right Rate
- Right Source
- Right Placement

4 R’s Nutrient Management (NRCS)
Placement of Manure

• Avoid spreading manure on **sloped areas** where manure could run to water sources

• Avoid spreading manure in **close proximity** to water sources

• Avoid manure application in areas subject to annual **flooding**, especially during flood prone periods

• Review seasonal setback distances
Seasonal Manure Application Setback Distances

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<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
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<td>80³</td>
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¹This is a floating date and should be evaluated based on current weather and forecast information.

²Application during November and December is typically not necessary and must be shown to be agronomic before manure is applied.

³Any manure application made from November-February should have a winter spreading plan in place.

See your local county guidelines for critical areas ordinance setbacks and/or manure application ordinance
Incorporation of Manure

• Manure incorporated into the soil is less prone to run-off
• Less likely to volatilize and be lost as ammonia
• Especially important for sloped areas and areas with close natural water and during wet seasons

Photo credit: news.maryland.gov, agripedia.au
Rate of Manure Application

• Avoid applying more than needed - excess material can lead to run-off and/or leaching

• Manure should be tested prior to application to know levels of nutrients

• Compare results of soil and manure nutrient tests to calculate how much manure you need

• Nutrient analysis can help apply targeted nutrients to keep plants within the sufficiency ranges
Timing of Manure Use

• Only apply manure when conditions are favorable
  ◦ No application on saturated or frozen soils
  ◦ Avoid applying when rain is expected

• Avoid applying from late fall through early spring
  ◦ Frequent rain and saturated soils can increase the risk of run-off and leaching

Photo credit: shutterfly.com, whelanberries.com
Manure Spreading Advisory (MSA)

The following Manure Spreading Advisory (MSA) shall be used in conjunction with your Nutrient Management Plan and application guidance to help you determine when applying manure is advisable. It is your responsibility to use this information and consult other risk management practices in order to avoid a runoff event.

Click on your farm location on the map below to receive the runoff risk rating for your specific area. Risk is based on the 72 hour precipitation forecast for a given area. This value best predicts the potential risk associated with movement of manure applied to a field.

Remember: If the risk is high, don't apply!

Click here if accessing map from a MOBILE device
Click here for a LARGER map
Application of **Liquid Manure**

- Soil tests = How much manure do you need?
- Get a test – will vary by season and facility
- Injection is best in high risk seasons
- Observe the forecast to find best timing
- Watch for swales/slopes to waterways
- Follow manure setback guidance
Application of **Solid** Manure

- Observe manure setback distances
- Incorporate immediately or have vegetative filter
- If pile in fields: Bigger or covered piles are better
- Don’t store manure piles:
  - On fields in flood plane
  - Within 100 feet of waterbody
  - Within 250 feet of wells
  - On a slope to a waterbody
  - Near neighbors
  - On well drained soils
Manure Application Risk Management

1. Calculate agronomic rate
2. Identify optimal fields
3. Determine when to apply
4. Assess field conditions
5. Apply and monitor fields

- Field Risk Maps
- Seasonal Manure Setbacks
- Manure Spreading Advisory
- Application Risk Management (ARM) Worksheet
Manure Storage

- Manure should be properly covered and contained to prevent runoff or leaching to groundwater

- Don’t store manure piles:
  - On fields in flood plane
  - Within 100 feet of waterbody
  - Within 250 feet of wells
  - On a slope to a waterbody
  - Near neighbors
  - On well drained soils

Photo credit: newagtalk.com, peakbuildersca.com
Land Management Practices

Coming up next!
Resources Available for Berry Growers

Farm planning at WCD
- Help identify potential resource concerns
- Suggest corrective measures
- Provide soil and water maps

Educational materials
- Farm Speaker Series (January 11)
- Factsheets

Whatcom Farm Speaker Series

Land Management for Productive Berries
Thursday January 11, 2017. noon-1:30 p.m.
Lynden Fairgrounds, People's Place

Speaker Matt Arrington, Berry Outreach Project Coordinator, Whatcom Conservation District, and a panel of your farming peers.

Berry land management practices & tools, presentation of new outreach materials, most current research and trials.