Best Management Practices (BMP’s) for Water Quality

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Auglaize County Cover Crops
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Topics

Parcel-level crop rotation (2010-2012)

- Current BMP adoption
- Field loss potential
- BMP Handbook information
  - Visual cues
  - BMP Detail
BMP Adoption Trends in WLEB and Maumee Watershed

Surveys conducted in 2013 (Maumee Watershed) then 2015 and 2017 WLEB.

Source: Robyn Wilson, 2018
What leads to adoption for practice?

• “Response-efficacy”
  – At the field level...
  – At the watershed scale...
    belief practice is effective.

• “Self-efficacy”
  – Belief practice can be implemented on a majority of their acres.
What Determines Loss Potential in a Field?

Source + Transport = Loss

- Soil Test Level (P)
- Nutrient additions
- Soil Type
- Drainage
- Management
- Cover
- Distance to water

- For P, Ohio P Index revision
- Pounds of loss per acre
Resources for BMP’s?

agbmeps.osu.edu website currently available!!

Publication ready for printer!!
Visual guide to concerns and BMP’s to address targeting practices to fields greatest contribution!

Focused on:
• Erosion
• Phosphorus
• Nitrogen
There are visual cues to risk!

Erosion-In stream

Possible BMP’s

• Filter Strip
• Streambank stabilization
• Riparian Buffer
There are visual cues to risk!

Erosion - In field

Possible BMP’s

• Grassed water way
• Filter Strip
• Tillage Intensity to maintain 30% cover
• Cover crop
There are visual cues to risk!
There are visual cues to risk!

Phosphorus

<table>
<thead>
<tr>
<th>Bray P 1 (ppm)</th>
<th>Mehlich III (ppm)</th>
<th>Concentration Range (ppm)</th>
<th>Loss Range (lbs/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>&lt;28</td>
<td>0.02-0.3</td>
<td>0.03-0.9</td>
</tr>
<tr>
<td>15-30</td>
<td>28-46</td>
<td>0.02-1</td>
<td>0.02-0.8</td>
</tr>
<tr>
<td>31-150</td>
<td>47-190</td>
<td>0.02-2</td>
<td>0.02-2.7</td>
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<tr>
<td>&gt;150</td>
<td>&gt;190</td>
<td>2-3</td>
<td>2-3.2</td>
</tr>
</tbody>
</table>

Possible BMP’s

- Nutrient Management Plans
- Amending soil with lime or gypsum
- Cover Crops
- Controlled Drainage
- Subsurface Placement
There are visual cues to risk!

Nitrogen

Possible BMP’s

- Nutrient Management Plan
- Nitrogen recommendation for organic
- In crop application manure
- Controlled drainage
- Cover crop
- Saturated buffer
Blind Inlet BMP-Highlights
Blind Inlet BMP-Highlights

What is it?
Replaces a tile riser. Is an infield practice.

Where is it used?
Located at a field’s lowest elevation point, where drainage patterns result in reduced trafficability or crop losses occur due to frequent saturated soils.

Why install?
a) filters first through soil and rock before entering the tile system
b) reduce plugging from debris export of nutrients, pesticides, and sediment
Blind Inlet BMP-Highlights

What do I need to know about it?

Effectiveness
a) reduce sediment load by 79% and Total P by 78% (Indiana)
b) 12 year monitoring did not reduce water flow but reduced DRP an sediment loading

Considerations
- 10 Year estimated life
- no routine maintenance
- do not impede equipment, support equipment traffic
- will not fix a poorly functioning drain

Cost
Depends upon size but generally $1500 to $3000
Blind Inlet BMP-Highlights

How does it work?
- consists of coarse material (gravel) backfilled around perforated pipes
- coarse material acts as a storage zone for water infiltrating laterally through the soil and vertically
- geotextile to limit clogging of the storage media
- water infiltrates through the filter material, depositing sediment, nutrients, and pesticides in the filter material and on the soil surface

Design
## BMP Practices Covered

<table>
<thead>
<tr>
<th>Practice</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Bed Stabilization (NRCS 584)</td>
<td>28</td>
</tr>
<tr>
<td>Open Channel/Two-Stage Ditch (NRCS 582)</td>
<td>32</td>
</tr>
<tr>
<td>Riparian Forest Buffer (NRCS 391)</td>
<td>36</td>
</tr>
<tr>
<td>Streambank Stabilization (NRCS 580)</td>
<td>39</td>
</tr>
<tr>
<td>Filter Strip/Grassed Riparian Buffer (NRCS 393 and 390)</td>
<td>43</td>
</tr>
<tr>
<td>Grassed Waterway (NRCS 412)</td>
<td>46</td>
</tr>
<tr>
<td>Water and Sediment Basin (NRCS 350 and 638)</td>
<td>50</td>
</tr>
<tr>
<td>In-Crop Application of Manure-Sourced Nutrients to Maximize Crop Uptake</td>
<td>54</td>
</tr>
<tr>
<td>Amending Soils With Lime or Gypsum (NRCS 333)</td>
<td>62</td>
</tr>
<tr>
<td>Nitrogen Recommendations When Organic Nitrogen Is Used</td>
<td>68</td>
</tr>
<tr>
<td>Nutrient Management Plan (NRCS 590)</td>
<td>72</td>
</tr>
<tr>
<td>Subsurface Placement of Nutrients</td>
<td>78</td>
</tr>
<tr>
<td>Cover Crop (NRCS 340)</td>
<td>84</td>
</tr>
<tr>
<td>Tillage Intensity to Maintain Target Residue Cover (NRCS 329 and 345)</td>
<td>90</td>
</tr>
<tr>
<td>Blind Inlet (NRCS 620)</td>
<td>99</td>
</tr>
<tr>
<td>Controlled Drainage/Drainage Water Management (NRCS 554)</td>
<td>103</td>
</tr>
<tr>
<td>Saturated Buffer (NRCS 604)</td>
<td>106</td>
</tr>
<tr>
<td>Wood Chip Bioreactor (NRCS 605)</td>
<td>109</td>
</tr>
</tbody>
</table>
Summary

• Address erosion, phosphorus and nitrogen
• Need to place BMP that are effectively targeted to field with the highest to attain goals
• Landowner and farmers need to assist public sector agencies to identify potential highest risk sites
• BMP resources are available
  • book is a place to start
  • latest information on website
  • I want your feedback tools on website to provide

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