Overview of Landscaping

Air Management Practices Assessment Tool (AMPAT)

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Funded by:

Application

• Used to reduce emissions from buildings and manure storage

Basic Operation

• Trees and shrubs are used to create a windbreak downwind and upwind
• Also called “Vegetative Environmental Buffers” or “VEBs”.

Figure from NRCS
Methods that VEBs Work

• Dilution and Dispersion:
  – Plume up and over
  – Stirs air and promotes dispersion of odors
  – Air movement through

• Deposition of Odorous Dusts:
  – Settling of dust much like snow fence

• Collection and Storage of Compounds within Trees:
  – Ammonia and odorous compounds mostly
  – Ammonia affinity to waxy coating
  – Micro-organisms on plant surfaces
  – Conifers better than deciduous
Methods that VEBs Work

• Physical Interception of Particles
  – Intercepting of dust and gases
  – Rough leaves with large surface areas

Methods that VEBs Work

• Aesthetics & Perception

Studies have shown that:
As farm “attractiveness” ↑
odor offensiveness ↓

Out of sight out of mind:
Softening visual cues
Natural Ventilation

- Goals of producer
- Functional Zones
- Create no hazards

Tree Care Options: Drip Irrigation

Weed Control Demo
Landscaping - Pros

• Size neutral in that the use can be adapted to most any size farm.
• Site aesthetics may influence perceptions of the odor emission.

Landscaping - Cons

• May take up to 5 years to become physically effective.
• Uses a significant amount of land.
• Effectiveness is incremental.
• Care is needed to avoid depositing snow in unwanted areas.
Effectiveness

<table>
<thead>
<tr>
<th>Component</th>
<th>Reduction</th>
<th>Notes</th>
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<tbody>
<tr>
<td>NH3</td>
<td>&lt;50%</td>
<td></td>
</tr>
<tr>
<td>H2S</td>
<td>----</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>6-15%</td>
<td>Intangible benefits</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>&lt;50 %</td>
<td></td>
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<tr>
<td>Volatile Organic Compounds (VOC)</td>
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<td></td>
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<tr>
<td>Cost</td>
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</tbody>
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For Further Information:

- NRCS
- ISU Extension

- If you are an educator and wish to have copies of powerpoint files, contact Jay Harmon (jharmon@iastate.edu).