SLURRY UTILIZATION
SAFE AND EFFICIENT
Introduction

Ammonia losses after atrazine soil application

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The initial loss rates

The total amount of loss throughout is mainly determined by
The initial loss rates, which already on the first day. Later the rates decrease.

Results and discussion

The experiments were conducted on a silt loam of pH 6.5
between 7 a.m. and 7 p.m. The experiments were repeated on the basis of equal amounts of same
Materials and methods.

The system of small wind tunnels was suitable for commercialization.
The mode of spray application is an important factor to deter pollution. By reducing ammonia losses, not only microbial pollutants can be diminished. Furthermore, incorporation of fertilizer into the soil, such as by cultivation, can reduce ammonia volatilization. Incorporation with a cultivator can increase the loss of ammonia volatilization. Incorporation immediately after spraying is also beneficial. Incorporation can be diminished by adding ammonium sulfate to the fertilizer. Incorporation is a very efficient way to keep the nitrogen available for plant growth. Incorporation also reduces the risk of leaching. The hazard of ammonia loss is lower after a dry application of fertilizer. Rainfall on the fertilizer is a risk factor. The effects of various rates of application of fertilizer and the incorporation of fertilizer can be observed. The losses can be reduced by applying the fertilizer immediately after spraying. The losses can rise to about 20% of the NH₃-N applied with a dry application. The losses can be reduced by using a method of incorporating the fertilizer, such as by cultivating the soil or by applying the fertilizer with a cultivator. The incorporation is easier in the composting process than in the fertilizer application. The composting process is more effective in reducing the loss of ammonia volatilization. The composting process is more effective in reducing the loss of ammonia volatilization.
Fig. 1: NH₃ losses after surface application of cattle (CS) and pig slurry (PS) on stubbles and straw (August) or compacted soil (November).

Fig. 2: NH₃ losses after spring application of cattle slurry (CS) into growing crops (winter wheat, winter barley: EC 29-32) or on soil surface resp.
Fig. 3: NH₃ losses from cattle slurry (CS) on grassland

Fig. 4: NH₃ losses from cattle slurry dependent on mode of application to the soil
Environmental Implications

Use of Organic Wastes as Fertilizers and its

Introduction

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A. Amburger

Environmental Implications

Life of organic wastes as fertilizers

Pro. of 1st Symposium: "Fertilization and the Environment"

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Table 1. Components of organic soil (average % in dry matter):

<table>
<thead>
<tr>
<th>Element</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>47</td>
</tr>
<tr>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>O</td>
<td>50</td>
</tr>
<tr>
<td>H</td>
<td>7</td>
</tr>
<tr>
<td>C/N ratio</td>
<td>7</td>
</tr>
<tr>
<td>H/C ratio</td>
<td>0.2</td>
</tr>
<tr>
<td>C/H ratio</td>
<td>0.4</td>
</tr>
</tbody>
</table>

The environmental implications of organic waste application can be as follows:

1. The utilization of organic waste as a source of plant nutrients.

2. The composting process can help in maintaining soil fertility and reducing the need for chemical fertilizers.

3. Organic waste can also reduce soil erosion and water runoff.

Table 1 shows the components of organic soil (average % in dry matter):

- C: Carbon,
- N: Nitrogen,
- O: Oxygen,
- H: Hydrogen,
- C/N ratio: Carbon to Nitrogen ratio,
- H/C ratio: Hydrogen to Carbon ratio

The ultimate goal is to promote sustainable agriculture and reduce the dependence on synthetic fertilizers and pesticides.
Figure 1. Percent of nitrate from sugar beet leaves after incorporation in October.

Table 2. N uptake by grams/mg poL

<table>
<thead>
<tr>
<th>Time of growth and N uptake</th>
<th>Without straw with straw</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>90</td>
</tr>
<tr>
<td>59</td>
<td>80</td>
</tr>
<tr>
<td>67</td>
<td>80</td>
</tr>
<tr>
<td>194</td>
<td>80</td>
</tr>
<tr>
<td>160</td>
<td>80</td>
</tr>
</tbody>
</table>

Low (below 15 and 20% of total N uptake) captured by crops include a number of factors affecting N uptake, including the quality of the soil, climate, and management practices. These factors are critical in determining the efficiency of N uptake by crops.

**Comments:**
- The lower rate of N uptake (less than in the control) with the annual N uptake by the plant is likely due to the combination of factors including soil fertility, crop type, and weather conditions. The figure illustrates the relationship between these factors and the rate of N uptake.
- Consistent with previous research, the results suggest that optimizing soil fertility and managing climate factors can improve N uptake efficiency.

**Conclusions:**
- Green material is essential for maintaining the soil in its natural state. The amount of green material is an important factor in determining the rate of N uptake.
- In summary, N uptake is directly influenced by factors such as the quality of the soil, climate conditions, and management practices. Understanding these factors can help improve N uptake and contribute to more efficient crop production.

The table above shows the percent of N uptake by grams/mg poL.
Wastes FROM THE PROCESSING OF PLANT PRODUCTS

necessarily result in an increased pollution of ground water with nutrient
accumulation of easily decomposable organic material for soil fertility does not
have the crops having the same level. According to these observations, the great

Table 2. N-acidifying and N-uptake in vegetable plants. "Weinsen and Firmenich, 1969."

Wastage from the production of plant products


Table 4. Composition of potash in water (after Fogg, 1981).

Table 5. Composition of potash in water (after Fogg, 1981).
<table>
<thead>
<tr>
<th>N uptake kg ha⁻¹</th>
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</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>60</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>72</td>
<td>-</td>
<td>128 (40 March)</td>
<td>49</td>
</tr>
<tr>
<td>76</td>
<td>-</td>
<td>128 (40 Nov)</td>
<td>49</td>
</tr>
<tr>
<td>72</td>
<td>-</td>
<td>63</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 5: Effect of varying levels of N on yield of barley

![Diagram showing effect of varying levels of N on yield of barley](image)

**Stable manure and liquid manure**

WASTES OF ANIMAL PRODUCTION

**Fig. 3.3** Effect of varying levels of N on yield of barley

![Diagram showing effect of varying levels of N on yield of barley](image)

**Table of Organic Wastes as Fertilizers**

<table>
<thead>
<tr>
<th>Time</th>
<th>Ammonium N (%)</th>
<th>0.4% KCl 0.7% Ca(No 1.1% P2O5) Field-mixed with water</th>
<th>Intra-plant N enriched (% of internal weight) 0.27% N 0.1% P2O5 Field-mixed with water</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>0.4% KCl 0.7% Ca(No 1.1% P2O5) Field-mixed with water</td>
<td>Intra-plant N enriched (% of internal weight) 0.27% N 0.1% P2O5 Field-mixed with water</td>
</tr>
</tbody>
</table>

**Note:** Suitable mixtures of stable and urine residue with straw where underfoot application is practiced, where urine residue can be applied directly to the manure and cattle. Where urine residue is applied, its N content is equivalent to about 20% of the total N of the manure. In addition, where urine residues are applied, they provide a source of mineral P and K, and help to improve the physical and chemical properties of the manure, making it more suitable for spreading on crops.
FIG. 6. NH₃ loss from slurry as dependent on mode of application.

Use of organic wastes as fertilizers.
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and to mitigate environmental pollution.

Fig. 8. Nitrogen content of soil + (with striped outdoor temperature) Nov.

Fig. 7. Nitrogen content of soil + (with striped outdoor temperature) Nov.

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Use of organic wastes as fertilizers

See your textbook, page 192.

In model network architecture, every node is connected to every other node. This allows for maximum flexibility and adaptability. However, it also leads to increased complexity and potential for failure.

A network that is not properly designed can lead to inefficiencies and potential bottlenecks. This is why network planning and design are crucial.

In practice, network architecture can range from simple star networks to complex hybrid architectures. Understanding the different types of networks and their pros and cons is essential for network design.

Reference:

For further reading, see: