Agriculture and the Environment

What are the issues or problems, esp. concerning agriculture?

Why do they exist?

What solutions are proposed?

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Agriculture as the Problem

- waterlogging and salinization of soils from irrigation
- contamination of surface and groundwater
- loss of beneficial insects
- buildup of chemical resistance in insects and weeds
- poisoning of farm workers from pesticides
- loss of traditional plant varieties from planting of monocultures

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Agricultural Solutions

- Better design and management of irrigation systems
- Fewer subsidies on fertilizer and pesticides
- Eco. incentives to use less water and chemicals
- Farmer education on application, storage and disposal of pesticides
- Other income sources
- Higher value crops
- Research on diverse cropping systems
- Regionally diversified crop breeding programs

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Agroecology relies on

indigenous farming knowledge and selected modern technology to manage diversity, incorporate biological principles and resources into farming systems, and intensify agricultural production
Table 19.1 Performance of Traditional, Modern, and Agroecological Potato-based Production Systems in Bolivia

<table>
<thead>
<tr>
<th>Performance indicator</th>
<th>Traditional low-input</th>
<th>Modern high-input</th>
<th>Agroecological system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potato yields (metric tons/hectare)</td>
<td>9.2</td>
<td>17.6</td>
<td>11.4</td>
</tr>
<tr>
<td>Chemical fertilizer (nitrogen + P₂O₅, kilograms/hectare)</td>
<td>0.0</td>
<td>80 + 120</td>
<td>0.0</td>
</tr>
<tr>
<td>Lupine biomass (metric tons/hectare)</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
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<tr>
<td>Energy efficiency (output/input)</td>
<td>15.7</td>
<td>4.8</td>
<td>30.5</td>
</tr>
<tr>
<td>Net income per invested Boliviano</td>
<td>6.2</td>
<td>9.4</td>
<td>9.9</td>
</tr>
</tbody>
</table>