

**General Principles
for the
Conversion Process**

Conversion Principles

- Shift from throughflow nutrient management to recycling of nutrients, with increased dependence on natural processes such as biological nitrogen fixation and mycorrhizal relationships.

Conversion Principles

- Use renewable sources of energy instead of non-renewable sources.

Conversion Principles

- Eliminate the use of non-renewable off-farm human inputs that have the potential to harm the environment or the health of farmers, farm workers, or consumers.

Conversion Principles

- When materials must be added to the system, use naturally-occurring materials instead of synthetic, manufactured inputs.

Conversion Principles

- Manage pests, diseases, and weeds instead of “controlling” them.

Conversion Principles

- Reestablish the biological relationships that can occur naturally on the farm instead of reducing and simplifying them.

Conversion Principles

- Make more appropriate matches between cropping patterns and the productive potential and physical limitations of the farm landscape.

Conversion Principles

- Use a strategy of adapting the biological and genetic potential of agricultural plant and animal species to the ecological conditions of the farm rather than modifying the farm to meet the needs of the crops and animals.

Conversion Principles

- Value most highly the overall health of the agroecosystem rather than the outcome of a particular crop system or season.

Conversion Principles

- Emphasize conservation of soil, water, energy, and biological resources.

Conversion Principles

- Incorporate the idea of long-term sustainability into overall agroecosystem design and management.

Levels of Research in the Conversion Process

- **Level 1:** Increase input use efficiency, reducing use of costly, scarce, or environmentally damaging inputs.
 - **Level 2:** Substitute conventional inputs and practices with alternative practices.
 - **Level 3:** Redesign agroecosystems to function on the basis of a new set of ecological processes.
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Factors Encouraging the Conversion Process:

- rising energy costs.
 - low profit margins of conventional practices
 - development of viable new practices
 - increasing environmental awareness among consumers, producers, and regulators.
 - new and stronger markets for alternatively grown and processed farm products.
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Study of the conversion process :

1. Monitor changes in ecological processes over time.
 2. Observe yield changes with changing practices, inputs, designs, and management.
 3. Understand changes in energy use, labor, and profitability that accompany the above changes.
 4. Identify key indicators of sustainability and continue to monitor them well into the future.
 5. Identify indicators of sustainability adapted to farmer-based monitoring programs
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Moving towards sustainability...

- Provide evidence of unsustainability in order to motivate changes in on-farm practices.
 - Predict how long a system can remain productive.
 - Prescribe ways of averting productive collapse short of complete redesign of the agroecosystem.
 - Prescribe ways of converting to a sustainable path through complete agroecosystem redesign.
 - Suggest ways of regenerating degraded agroecosystems.
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