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Expected outcome of the demonstrators

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Demonstrator 1: Mini Composting System
Expected Outcome:

- Production of **10-15 kg of nutrient-rich compost** every month from organic waste generated by the farm.
- Reduction of waste disposal costs by approximately **20-30%**, as organic waste is reused.
- Improvement in soil fertility, leading to an **increase in crop yields by up to 15% over a season** when the compost is applied to farm plots.

Process:

1. Regularly collect and categorize organic waste into compostable (e.g., food scraps, leaves) and non-compostable materials.
2. Ensure proper moisture levels and frequent aeration in the compost bin to accelerate decomposition.
3. Conduct soil tests before and after applying compost to measure fertility improvements.

Demonstrator 2: Mini Rainwater Harvesting System
Expected Outcome:

- Collection of up to **500 liters of rainwater per month**, depending on rainfall patterns.
- Reduction in groundwater usage for irrigation by approximately **40-50%** during rainy months.
- Cost savings of around **10-15% on water bills**, as less potable water is used.

Process:

1. Design a rainwater harvesting system with efficient gutters and storage tanks.
2. Monitor rainfall using a rain gauge and track water collection to optimize the system.
3. Use harvested water for specific tasks, such as drip irrigation or cleaning farm equipment, ensuring maximum utility.

Demonstrator 3: Sustainable Micro-Garden with Mulching
Revised Expected Outcome:

- Reduction in water usage for irrigation by up to **30%** due to the mulching technique.

- Decrease in soil erosion and weed growth, ensuring consistent crop health and output.

Process:

1. Apply mulch (e.g., dried leaves, straw) around plant roots to retain moisture and suppress weeds.
2. Utilize compost produced by the mini composting system to enrich the soil.
3. Monitor plant growth and adjust watering schedules to match the needs of the garden.

Demonstrator 4: Solar Lighting System
Expected Outcome:

- **24/7 lighting availability** in key farm areas such as pathways, storage rooms, or workspaces.
- Reduction of energy costs by **100%**, as the farm is powered entirely by renewable solar energy.

Process:

1. Install solar panels in a location with maximum sun exposure to ensure battery storage efficiency.
2. Test and maintain the system regularly to prevent issues with the solar panel or LED components.
3. Use lighting strategically in high-priority areas to maximize utility and minimize unnecessary energy use.