# Environment & Ecology · GS - III

**How can agrivoltaics contribute to sustainable agriculture, farmers' income and India's renewable energy transition? Discuss the challenges associated with its implementation.**

| EXAM YEAR | PAPER | SUBJECT |
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| DAILY PRACTICE 20/10/2026 | GS - III | Environment & Ecology |

| MARKS | WORD LIMIT |
|---|---|
| 10 | ~150 words |

## Answer Hint

**Agrivoltaics, solar photovoltaic technology, dual land use, farmers' income, renewable energy, sustainable agriculture, food security, crop productivity, installation costs, panel design, water management, farmer awareness, grid connectivity, government support.**

## Model Answer

### 1. Introduction

Agrivoltaics refers to the integration of solar power generation and agricultural activities on the same land. It offers an opportunity to address India's growing energy needs while supporting agricultural livelihoods.

### 2. Main Body

**Benefits of Agrivoltaics**

- Additional income: Farmers can earn from crop cultivation and electricity generation.
- Efficient land use: The same land serves agricultural and energy purposes.

- Climate resilience: Partial shading may reduce heat stress and water loss for certain crops.
- Clean energy: Solar power supports India’s renewable energy and climate commitments.
- Rural development: Installation and maintenance can create local employment opportunities.
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**Major Challenges**

- High initial installation and maintenance costs.
- Unsuitable panel height or spacing may restrict farm machinery and affect crop yields.
- Limited technical awareness and access to finance among small farmers.
- Grid connectivity, electricity purchase arrangements and maintenance difficulties.
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**Way Forward**

The government should promote pilot projects, affordable financing, crop-specific designs, farmer training and reliable grid connectivity.

## 3. Conclusion

Agrivoltaics can strengthen the link between agricultural development and clean energy. Its success depends on locally suitable designs, farmer participation and policies that protect both crop productivity and farmers’ incomes.