Science & Technology · GS - III

Explain by giving two examples, how biotechnology has helped the Indian farmers in processing their perishable crops.

EXAM YEAR	PAPER	SUBJECT
2026	GS - III	Science & Technology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Agricultural biotechnology, post-harvest losses, shelf life, value addition, enzymes, microbial biotechnology, tomato processing, mango preservation

Model Answer

Biotechnology can convert highly perishable horticultural produce into stable, value-added products while extending shelf life and reducing post-harvest losses.

Two examples illustrate this:

1. Tomato: ICAR has developed a functional ready-to-serve tomato-based beverage using tomato pulp and plant-derived functional ingredients. The product converts perishable tomatoes into a shelf-stable value-added beverage, with retention of important bioactive compounds under refrigerated storage.
2. Mango: Biotechnology-supported post-harvest protocols, including biological control and treatments developed by ICAR-CISH, help reduce disease incidence and preserve quality during long-distance transport. Hot Water Treatment and CISH-Met Wash have supported longer shelf life and improved exportability.

Such interventions create a shift from “sell immediately” to “process, preserve and market”, enabling farmers to capture greater value.

Thus, biotechnology contributes not merely to crop productivity but also to post-harvest management, value addition, export competitiveness and income stabilisation. Wider adoption requires affordable technologies, local processing units and farmer–industry linkages.