

#### **PROJECT 24: Network Program on Precision Agriculture (NePPA)**

- Optimized sensor-based irrigation (20-22% soil moisture) and N-fertigation for tomato and capsicum in polyhouse and open field.
- Maximum WUE achieved with I1N3 treatment; automated system installed in 6,000 m<sup>2</sup> open field and 500 m<sup>2</sup> polyhouse.

#### **PROJECT 25: Sensor-based Vertical Farming and Aquaponics [NASF]**

- Developed integrated vertical aquaponics for *Channa striata* fish and leafy vegetables (mint, amaranth, water spinach) using NFT system.
- Fish weight gain from 8g to 75g in 3 months; nitrogen accumulation increased from 25 to 144 ppm; leafy vegetable yield 250-400 g/harvest/unit

#### **PROJECT 26: Agripreneurship in Grafted Vegetables [UPCAR]**

- Trained 84 progressive farmers and 852 farmers on grafting technology; 12,000+ farmers exposed through visits.
- Developed 5 agri-preneurs in eastern UP districts; sold 5,500 grafted seedlings generating revenues; published technical bulletins on Pomato/Brimato.

#### **PROJECT 27: Farmer FIRST Program**

- Demonstrated IIVR varieties across 9 villages (406 farmers, 44.69 ha); yield increase ranged from 14.42% (bitter gourd) to 26.12% (okra).
- Income increase of 16.89-36.30% observed; distributed 665 kitchen garden packets to 505 households for nutritional security.

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