Sampurna 2026

Reducing Food Loss Strengthening Food Systems in Karnataka

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Information Compendium

Horticulture Cluster Analysis for Karnataka

May 2026

Reducing Food Loss
Strengthening Food Systems in Karnataka

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Losses Happen at Every Stage of the Value Chain

From the moment of harvest to the final point of sale, produce faces risk of loss at multiple stages.

Harvesting	Sorting & Grading	Farm Storage	Transport	Wholesale & Retail	Processing Units
Damage at field level from improper technique, timing & handling	Largest single loss stage; inadequate infrastructure at farm gate	On-farm storage fails without cooling; especially for onion & grapes	No reefer vehicles; heat, vibration & delays cause spoilage in transit	Multiple handling points; price volatility causes inventory build-up	Capacity bottlenecks; quality rejection; peak-season overflow

No single stage is safe. The losses compound where each stage adds to the next, eroding what the farmer produced.

We Needed Evidence — Not Assumptions

To design a meaningful innovation challenge, we first had to understand where losses truly occur.

01

Identify 7 priority crops

Onion, Mango, Banana, Tomato, Grapes, Pomegranate, Pineapple — representing the majority of horticulture production

02

Map every value chain stage

Farm level: harvesting, sorting, packaging, storage → Market level: godown, wholesale, retail, processing, transport

03

Assess loss at each stage

Stage-wise loss percentages from field assessments, FPO interviews and officer estimates across districts

04

Identify critical hotspots

Pinpoint where the highest losses occur by crop and stage — to design targeted, evidence-backed challenge categories

Why a Gap Assessment?

- A cold storage scheme placed in the wrong district solves nothing.
- A logistics platform built for a crop whose losses peak at the farm gate misses the point.
- Good intentions without grounded diagnosis lead to the wrong solutions.
- We needed to know which crops, which stages, and which structural barriers before designing anything.

From Evidence to Action: The Sampurna Grand Challenge 2026

The gap assessment showed us exactly where the problems lie. The challenge invites the ecosystem to solve them.

Harvest & post Harvest Farm Operations

Post-Harvest Value Chain Solutions

Harvesting, sorting, grading, farm storage, on-farm mechanisation and pre-cooling

Packaging & Aggregation

Sustainable Packaging + Community Models

Biodegradable packaging, reusable crates, MAP, community aggregation and collective enterprise

Logistics & Transport

Efficient Logistics Optimisation

Cold-chain logistics, last-mile transport, route optimisation, shared reefer vehicles

Processing, Finance & Digital

Finance + Digital + Circular Economy

FPO credit and working capital, digital decision systems, waste-to-value and circular economy solutions

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The 7 Challenge Categories

1

Post-Harvest Value Chain Solutions

On-farm handling, sorting, grading, cooling, mechanisation

2

Sustainable Packaging Innovations

Biodegradable packaging, reusable crates, MAP, freshness indicators

3

Efficient Logistics Optimization

Cold chain, last-mile transport, route optimisation, load matching

4

Community-Led Aggregation & Enterprise

FPO models, collection centres, collective branding, individual champions

5

Innovative Financial Access Solutions

FPO credit, warehouse receipt finance, digital lending, insurance-linked products

6

Digital Decision Systems for Food Loss

Multi-stakeholder platforms, predictive analytics, end-to-end traceability

7

Circular Economy & Loss-to-Value Solutions

Dehydration, juice/puree, biogas, composting, by-product extraction

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Key horticulture crops

Onion

PRODUCTION
30,13,848 MT

AREA
1,65,422 HA

Tomato

PRODUCTION
25,64,631 MT

AREA
67,949 HA

Mango

PRODUCTION
14,48,757 MT

AREA
1,37,494 HA

Banana

PRODUCTION
12,88,793 MT

AREA
48,853 HA

Grapes

PRODUCTION
12,24,666 MT

AREA
47,116 HA

Pomegranate

PRODUCTION
2,38,821 MT

AREA
22,970 HA

Pineapple

PRODUCTION
70,948 MT

AREA
1,207 HA

SHARE OF PRODUCTION

These 7 crops represent **73%** of Karnataka's total fruit and vegetable production volume.

RATIONALE

These crops account for the largest share of horticulture production in the state, making them the highest-impact targets for reducing post-harvest loss in the state.

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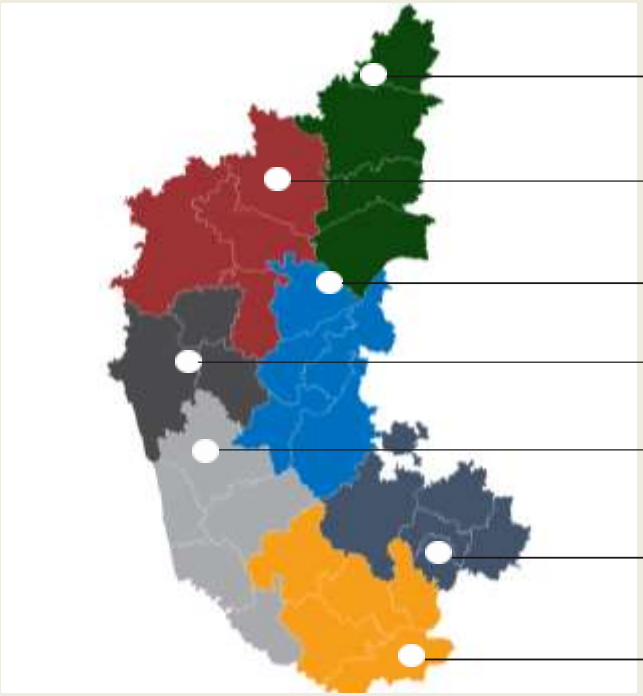
Karnataka's major production clusters

Basis of clustering

District-level production and infrastructure data from Karnataka government departments was analysed across all 31 districts. Districts were grouped based on their relative crop concentration compared to the state average, with geographic contiguity as a binding constraint. This yielded 7 clusters, each with a distinct crop identity and a documented gap between production scale and processing capacity.

** The clustering methodology is detailed in the annexures*



3 Kalyana Karnataka Onion-Tomato cluster
(Raichur, Yadgiri, Kalaburagi, Bidar)

1 North Karnataka Onion-Grape-Raisin-Pomegranate cluster
(Vijayapura, Belagavi, Bagalkote, Gadag)

2 Central Karnataka Onion-Pomegranate cluster
(Chitradurga, Davanagere, Koppal, Ballari, Vijayanagara)

6 Northwest Karnataka multi-crop cluster
(Dharwad, Haveri, Uttara Kannada)

7 Western Ghats Banana-Pineapple cluster
(Shivamogga, Chikkamagaluru, Kodagu, Dakshina Kannada, Udupi)

5 East Karnataka Tomato-Mango processing cluster
(Kolar, Chikkaballapura, Bengaluru (urban), Bengaluru (rural), Tumakuru)

4 South Karnataka Banana-Tomato-Mango cluster
(Mysuru, Mandya, Chamarajanagara, Hassan, Ramanagara)

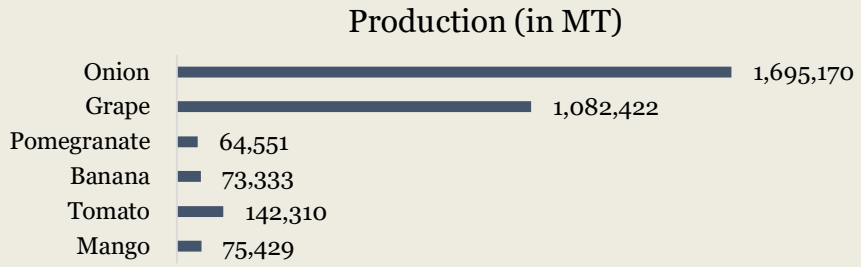
Challenge category 1: Post-harvest value chain solutions

North Karnataka Onion-Grape-Raisin-Pomegranate cluster

(Vijayapura, Belagavi, Bagalkot, Gadag)

Production

Out of the total fruits & vegetables production of 40 million MT in this cluster, the seven crop-specific production accounted for approximately 76.7%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

- Cold storage units with 1,11,359 MT capacity exist for Grapes and Pomegranate. Production exceeds the cold storage capacity.
- Cold storage units with 1,31,996 MT capacity cover other fruits and vegetables like Lemon, Potato and Beetroot. A new cold storage (12,000 MT) unit is coming up in Vijayapura.
- 7 seed production centers covering 70 hectares, 45 horticulture farms and nurseries across 692 acres and 3 agricultural training centers
- 42 WDD FPOs recorded ₹11 Cr in transactions during FY 23-24, primarily focusing on Onion, Banana and Tomato, while 64 WDD FPOs operated across all fruits and vegetables with ₹19 Cr total transactions in FY 23-24.
- FPOs supported by the Horticulture Department recorded ₹24 crores in transactions in FY 23-24 for Onion, Grapes, Pomegranate, Lemon, Sweet potato etc.

Challenges reported

Post-harvest losses across Grape, Pomegranate, Tomato, Onion, Banana, and Mango in North Karnataka are primarily attributed to infrastructure.
Key issues reported by various district officials include

- *Grape (Bagalkot, Belagavi) suffer from gray mold, moisture loss, and lack of pre-cooling facilities.*
- *Pomegranate (Bagalkot, Gadag) are damaged by bacterial blight, wilt disease, and moisture-induced shriveling.*
- *Onion (Bagalkot) suffer from improper curing, high moisture content, and inadequate storage facilities.*
- *Banana (Gadag) experience labour shortage, poor handling, and lack of ripening and storage facilities.*
- *Mango (Belagavi) suffer from weather stress, fruit fly infestation, and fungal diseases.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:
- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
- *Directorate of Horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture Department FPOs*

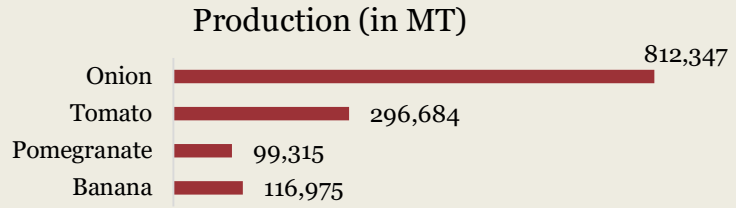
Challenge category 1: Post-harvest value chain solutions

Central Karnataka Onion-Pomegranate cluster

(Chitradurga, Davanagere, Koppal, Ballari, Vijayanagara)

Production

Out of the total fruits & vegetables production of 18 million MT in this cluster, the seven crop-specific production accounted for approximately 74.1%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

Cold storage units with 6269 MT capacity exist specifically for Mango, Onion, Grapes, and Pomegranate. However, production exceeds the cold storage capacity.

Cold storage units with 2,47,252 MT capacity are available for all fruits and vegetables

11 seed production centers covering 241 hectares ,45 horticulture farms and nurseries across 1,324 acres and 4 agricultural training centers.

58 WDD FPOs recorded ₹23 Cr in transactions during FY 23-24, primarily focusing on Onion, Tomato and Pomegranate, while 62 WDD FPOs operated across all fruits and vegetables with ₹29 Cr total transactions in FY 23-24.

FPOs supported by the Horticulture Department recorded ₹48 lakhs in transactions in FY 23-24.

Challenges reported

Post-harvest losses in Onion, Pomegranate, and Banana in Central Karnataka are primarily attributed to infrastructure and handling practices.
Key issues reported by various district officials include

- *Onions (Chitradurga) suffer from improper curing methods and lack of adequate storage facilities, with prolonged storage periods exacerbated by market price fluctuations.*
- *Pomegranates (Chitradurga) are damaged by sun scorching during harvest, bacterial blight infection, fruit cracking, and poorhandling practices during transport.*
- *Bananas (Ballari) experience sun scorching due to lack of bunch covering, bruising during harvest operations, and absence ofpre-cooling facilities before storage and transport.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:
- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*

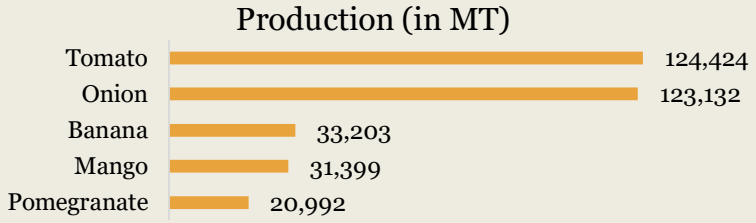
Challenge category 1: Post-harvest value chain solutions

Kalyana Karnataka Onion-Tomato cluster

(Raichur, Yadgiri, Kalaburagi, Bidar)

Production

Out of the total fruits & vegetables production of 0.7 million MT in this cluster, the seven crop-specific production accounted for approximately 76.7%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

Cold storage units with 6121 MT capacity exists for key crops like Grapes and Pomegranate in Kalyana Karnataka.

Cold storage units with 1,28,573 MT capacity are available across all fruits and vegetables.

9 seed production centers covering 70 hectares, 47 horticulture farms and nurseries across 1,154 acres and 3 agricultural training centers.

20 WDD FPOs recorded ₹2 Cr in transactions during FY 23-24, primarily focusing on Onion and Pomegranate, while 41 WDD FPOs operated across all fruits and vegetables with ₹13 Cr total transactions in FY 23-24.

FPOs supported by the Horticulture Department recorded ₹ 1.23 crores in transactions in FY 23-24 for onion, tomato, watermelon, guava and cabbage

Challenges reported

Post-harvest losses in Onion, Pomegranate, Mango and Banana in Kalyana Karnataka are primarily attributed to infrastructure and handling practices.
Key issues reported by various district officials include

- *Pomegranate (Raichur, Yadgiri) suffer from bacterial blight, wilt disease, poor market access, and inadequate storage facilities.*
- *Mango (Raichur, Bidar) face unseasonal rainfall, mango hopper infestation, price volatility, and improper harvesting practices causing major pre- and post-harvest losses.*
- *Onion (Yadgiri, Bidar) suffer from purple blotch disease, bulb rotting, handling damage, and inadequate storage infrastructure, leading to higher crop losses.*
- *Banana (Kalaburagi) face poor post-harvest handling, over-ripening during storage and transport, and inadequate packing standards.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:
- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
- *Directorate of Horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture Department FPOs*

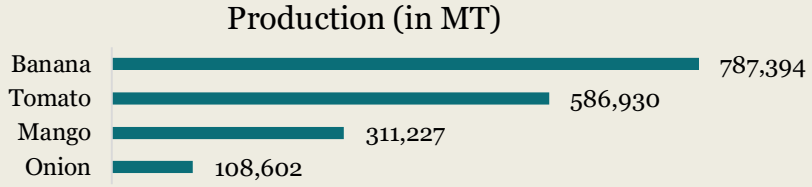
Challenge category 1: Post-harvest value chain solutions

South Karnataka Banana-Tomato-Mango cluster

(Mysuru, Mandya, Chamarajanagara, Hassan, Ramanagara)

Production

Out of the total fruits & vegetables production of 22 million MT in this cluster, the seven crop-specific production accounted for approximately 78.6%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

- Cold storage units with 9142 MT capacity exist for key crops like Banana and Mango in South Karnataka.
- Cold storage units with 78,692 MT capacity are available across all fruits and vegetables. Upcoming units in Hassan (2000 MT) and Mandya (2000 MT).
- Processing infrastructure units with 4500 MT/yr capacity for crop-specific and 5460 MT/yr capacity for all fruits/ vegetables.
- 5 seed production centers (46 hectares) and 93 horticulture farms and nurseries (4,433 acres) support agricultural development, with training centers in Hassan, Mandya, and Mysuru.
- 58 WDD FPOs recorded ₹18 Cr in transactions during FY 23-24, primarily focusing on Banana, Mango, Tomato, Pomegranate.
- FPOs supported by the Horticulture Department recorded ₹1.2 Cr worth transactions in FY 23-24.

Challenges reported

Post-harvest losses in Onion, Mango, and Banana in South Karnataka are primarily attributed to infrastructure and handling practices.

Key issues reported by various district officials include

- *Banana (Mysuru, Chamarajanagara) suffer from improper harvesting techniques, lack of disease-free planting material, rough handling during collection, lack of ventilated transport facilities, and poor sorting and grading practices.*
- *Mango (Mysuru) experience unseasonal rainfall patterns, hailstorm damage, lack of adequate processing infrastructure, and price fluctuation pressures that exacerbate both pre-harvest and post-harvest losses.*
- *Onion (Mandya) suffer from time-consuming grading operations, size variation challenges, and non-uniformity in produce quality.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
- *Directorate of Horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture Department FPOs*

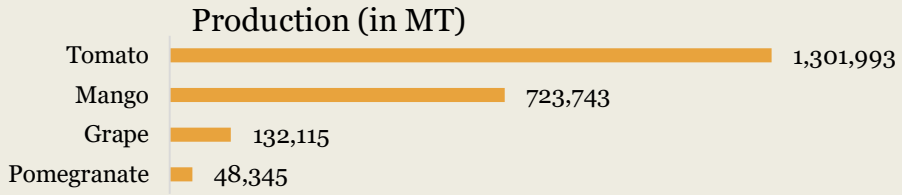
Challenge category 1: Post-harvest value chain solutions

East Karnataka Tomato-Mango cluster

(Kolar, Chikkaballapura, Bengaluru (Urban), Bengaluru (Rural), Tumakuru)

Production

Out of the total fruits & vegetables production of 3.3 million MT in this cluster, the seven crop-specific production accounted for approximately 69%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

- Cold storage units with 14,832 MT capacity exist for key crops like Tomato in East Karnataka.
- Cold storage units with 46,982 MT capacity are available across all fruits and vegetables. Upcoming unit in Kolar (2000 MT).
- Processing infrastructure units with 9,65,338 MT/yr capacity for crop-specific and 10,02,890 MT/yr capacity for all fruits/vegetables.
- 7 seed production centers (86 hectares) and 54 horticulture farms and nurseries (4,383 acres) support agricultural development, with training centers in Chikkaballapura and Tumakuru.
- 40 WDD FPOs recorded ₹13 Cr in transactions during FY 23-24, focusing on Grapes, Mango, Tomato, Pomegranate and other vegetables.
- FPOs supported by the Horticulture Department recorded ₹1.4 Cr worth transactions for FY 23-24 for Onion, Pomegranate and Mango

Challenges reported

Post-harvest losses in Mango, Pomegranate, and Tomato in East Karnataka are primarily attributed to infrastructure and handling practices.
Key issues reported by various district officials include

- *Mango (Kolar, Chikkaballapura, Bengaluru Rural, Bengaluru Urban, Tumakuru) face losses due to poor maturity assessment, mechanical damage, unseasonal rainfall, sooty mold, mealy bugs, and price fluctuations.*
- *Pomegranate (Chikkaballapura) suffer from bacterial blight, anthracnose, fruit cracking, poor handling, and inadequate cold chain facilities.*
- *Tomato (Bengaluru Urban) are affected by unseasonal rainfall, pests and diseases, supply chain gaps, and weak processing infrastructure, leading to higher pre- and post-harvest losses.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:
- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
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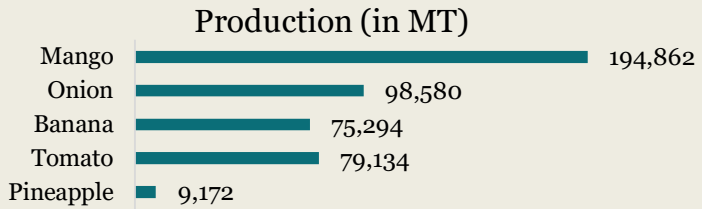
Challenge category 1: Post-harvest value chain solutions

Northwest Karnataka multi-crop cluster

(Dharwad, Haveri, Uttara Kannada)

Production

Out of the total fruits & vegetables production of 0.4 million MT in this cluster, the seven crop-specific production accounted for approximately 76.8%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

- Cold storage units with 8022 MT capacity exist for key crops like Banana and Mango in Northwest Karnataka.
- Cold storage units with 1,37,131 MT capacity are available across all fruits and vegetables including frozen & dry fruits & vegetables. Upcoming unit in Haveri (2000 MT).
- Processing infrastructure units with 944 MT/yr capacity for crop-specific and 2160 MT/yr capacity for all fruits/vegetables.
- 2 seed production centers (10 hectares) and 41 horticulture farms and nurseries (449 acres) support agricultural development. Training centers in Dharwad, Haveri, and Uttara Kannada.
- FPOs supported by the Horticulture Department recorded ₹33 lakhs worth transactions for FY 23-24 for Onion, Banana
- 48 WDD FPOs recorded ₹33 Cr in transactions during FY 23-24, focusing on Banana, Soyabean, Chilli etc.

Challenges reported

Post-harvest losses in Onion, Mango, and Pineapple in Northwest- Karnataka are primarily attributed to infrastructure and handling practices.

Key issues reported by various district officials include

- *Mango (Dharwad) suffer from pest and disease pressures, lack of farm-level storage facilities, and wholesale price crashes due to simultaneous large-scale output*
- *Onion (Dharwad) experience poor field-level grading practices, lack of affordable packaging materials, and price reduction delays by wholesalers that compound post-harvest losses and market access challenges.*
- *Pineapple (Uttara Kannada) face late harvesting for distant markets, substantial losses during transportation to remote locations, and inadequate logistics infrastructure.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
- *Directorate of Horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture Department FPOs*

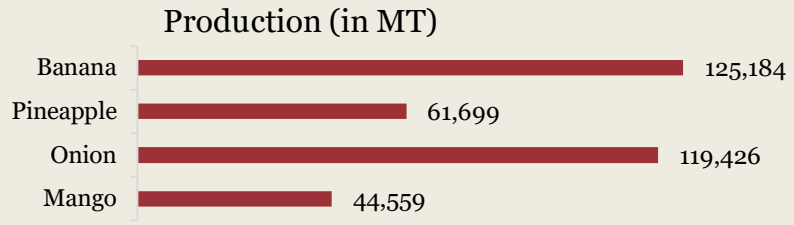
Challenge category 1: Post-harvest value chain solutions

Western Ghats Banana-Pineapple cluster

(Shivamogga, Chikkamagaluru, Kodagu, Dakshina Kannada, Udupi)

Production

Out of the total fruits & vegetables production of 0.6 million MT in this cluster, the seven crop-specific production accounted for approximately 67.8%.



Source: Horticulture Crop Statistics of Karnataka State at a Glance – 2023-24

Existing Ecosystem

Cold storage units with 4917 MT capacity exist for Pineapple, Banana, and Mango.

Cold storage units with 12,230 MT capacity available for Banana, Jackfruit, Mango, and Pineapple, with upcoming Shivamogga unit (4000 MT).

1 processing infrastructure unit 1073 MT/yr capacity for crop-specific and 1200 MT/yr capacity for all crops like Pineapple, Banana, Mango, and Jackfruit.

7 seed production centers (86 hectares) and 56 horticulture farms (1,732 acres) with training centers in Shivamogga, Chikkamagaluru, and Kodagu.

25 WDD FPOs recorded ₹22 Cr transactions in FY 23-24, focusing on Banana, Pineapple, and Tomato etc.

₹ FPOs supported by the Horticulture Department recorded ₹6.07 crores worth transactions for FY 23-24 for Pineapple and Pomegranate.

Challenges reported

Post-harvest losses in Onion, Banana, and Pineapple in Western Ghats are primarily attributed to infrastructure and handling practices.
Key issues reported by various district officials include

- *Banana (Shivamogga, Chikkamagaluru) suffer from high pest and disease incidence, wild animal damage, natural calamities, lack of skilled labour, and high storage and transportation losses.*
- *Pineapple (Udupi) experience pest and disease pressures, natural calamities, delayed harvesting for distant markets, and variety unsuitability for processing.*

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Data sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:
- *KAPPEC – Processing infrastructure & Watershed Development Department (WDD) FPOs*
- *Directorate of Horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture Department FPOs*

Challenge category 2: Sustainable packaging innovations

This challenge category focuses on developing solutions that reduce produce loss through better packaging across the fruits and vegetables value chain.

Post-harvest losses across the clusters are significant, with a substantial share occurring during the packaging stage where produce is damaged or rejected at the point of packing:

North Karnataka Onion-Grape-Raisin-Pomegranate Cluster

01

Packaging related losses range between 3.5% to 4%.

South Karnataka Banana-Tomato-Mango Cluster

03

Banana alone records an average packaging related loss of 4.5%

Central Karnataka Onion-Pomegranate cluster

02

The main reason for packaging related loss in Banana was reported to be the lack of bunch covering

East Karnataka Tomato-Mango Cluster

04

Mango records an average packaging related loss of 20%

Kalyana Karnataka Onion-Tomato Cluster

05

- Average packaging related losses are approximately 7.5% across pomegranate and banana
- Key reason for packaging related loss in Banana was reported to be the poor packing practices

Northwest Karnataka multi-crop cluster

06

The main reason for packaging related loss in Onion was reported to be the limited availability of low-cost packaging materials

** The post-harvest loss estimations or reasons at packaging level were not available for Western Ghats Banana-Pineapple cluster*

Across the clusters, only East Karnataka has a recorded packhouse capacity of 300 MT; for all other clusters, this data is unavailable.

Disclaimer: The percentages are based on anecdotal estimations and reports shared by district officials of Horticulture Department (GoK), for select crops and select districts, as of March 2026, and are subject to validation and revision by Government of Karnataka, prior to any formal publication or use.

Challenge category 3: Efficient logistics optimisation solutions

This challenge category focuses on developing solutions that enhance logistics efficiency across the fruits and vegetables value chain. During peak harvest seasons, inadequate coordination between aggregation, transportation, storage, and market linkages leads to significant produce loss making logistics a critical intervention point.

2.5 - 25 %

Post-harvest losses linked to logistics inefficiency, reported across crops and districts

7 crops

(Pomegranate, Onion, Pineapple, Mango, Tomato, Grapes, Banana)

with critical farm-level transport gaps

5 crops

(Pomegranate, Onion, Pineapple, Mango, Banana)

with critical transport gaps at market level

- *Farm level refers to losses that occur on the farm itself - at harvest, during sorting, grading, and initial handling before the produce leaves the farmer's hands.*
- *Market level refers to losses that occur after the produce has left the farm - during transport, at wholesale or retail markets, and at the point of sale where damage, rejection, or spoilage happens in the hands of traders, aggregators, or retailers.*

Major logistics-related loss reasons across crops:

- **Onion:** Non-availability of nearby market (South Karnataka); price reduction and delays by wholesalers leading to prolonged holding (Northwest Karnataka)
- **Mango:** Wholesale price crash due to simultaneous large output with no dispatch coordination (Northwest Karnataka); mechanical injury during handling and movement (East Karnataka)
- **Banana:** Rough handling during collection and lack of ventilated transport (South Karnataka); poor post-harvest handling, over-ripening, and poor packing (Kalyana Karnataka); high storage and transportation losses (Western Ghats); labour shortage and poor handling during evacuation (North Karnataka)
- **Tomato:** Supply chain gaps leading to delayed evacuation and quality deterioration (East Karnataka)
- **Pomegranate:** Poor handling during transport (Central Karnataka); lack of cold chain infrastructure during transit (East Karnataka); shrivelling from moisture loss in transit (North Karnataka)
- **Pineapple:** Late harvesting for distant markets and losses during transportation (Northwest Karnataka); delayed movement to market causing total loss during gluts (Western Ghats)
- **Grapes:** No pre-cooling or cold chain available; moisture loss during transit (North Karnataka)

Source: As reported by district officials of Horticulture Department, Government of Karnataka, as of March 2026

Challenge category 3: Efficient logistics optimisation solutions

Across Karnataka, logistics planning is not a support function, it is the primary intervention point for loss reduction.

Three structural realities make logistics the defining intervention:

- **Short shelf life:** Tomato, banana, and mango have a harvest-to-market window measured in days. Every delay is a loss.
- **High perishability**: Without cold chain, ventilated transport, and careful handling, temperature sensitivity and bruising erase value at every handling step.
- **Seasonality**: Concentrated harvest windows create volume surges that overwhelm vehicles, aggregation points, and mandis simultaneously, forcing distress sales and quality write-offs across the state.

Challenge category 4: Community-led aggregation and enterprise innovations

This challenge category focuses on developing solutions that address fragmented marketable surpluses, weak local aggregation, and limited post-harvest services, which lead to distress sales, market congestion, and low-price realization during peak harvest periods.

North Karnataka Onion-Grape-Raisin-Pomegranate cluster

The Horticulture Department FPOs handles...

- **23 MT** of annual produce volume with transactions valued at **₹89 lakh** (FY 23–24) across key crops such as Grapes and Pomegranate
- **1553 MT** of annual produce volume with transactions valued at **₹2460 lakh** (FY 23-24) for major fruits and vegetables grown like Onion, Lemon, Sweet Potato

The Watershed Development Department FPOs includes...

- **42** FPOs with transactions valued at **₹11 crores** (FY 23–24) across key crops such as Banana, Onion, Tomato
- **64** FPOs with transactions valued at **₹19 crores** (FY 23-24) for major fruits and vegetables grown like Banana, Onion, Tomato

A total of 55 Self-Help Groups (SHGs) are engaged in natural food production

Central Karnataka Onion-Pomegranate cluster

The Horticulture Department FPOs handles 216 MT of annual produce volume with transactions valued at ₹48 lakh (FY 23–24) for major fruits and vegetables grown like Coconut

The Watershed Development Department FPOs includes...

- **58** FPOs with transactions valued at **₹23 crores** (FY 23–24) across key crops such as Pomegranate, Onion, Tomato
- **62** FPOs with transactions valued at **₹29 crores** (FY 23-24) for major fruits and vegetables grown like Banana, Tomato, Sugarcane, Onion, Pomegranate

A total of 18 Self-Help Groups (SHGs) are engaged in natural food production

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *Directorate of horticulture – Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *KSRLPS - SHGs*

Challenge category 4: Community-led aggregation and enterprise innovations

Kalyana Karnataka Onion-Tomato cluster

The Horticulture Department FPOs handles…

- **1145 MT** of annual produce volume with transactions valued at **₹35 lakh** (FY 23–24) across key crops such as Onion and Tomato
- **1241 MT** of annual produce volume with transactions valued at **₹123 lakh (**FY 23-24) for major fruits and vegetables grown like Onion, Lemon, Sweet Potato

The Watershed Development Department FPOs includes…

- **20** FPOs with transactions valued at **₹2 crores** (FY 23–24) across key crops such as Pomegranate, Onion
- **41** FPOs with transactions valued at **₹13 crores (**FY 23-24) for major fruits and vegetables grown like Soyabean, Onion, Pomegranate

A total of 16 Self-Help Groups (SHGs) are engaged in natural food production

South Karnataka Banana-Tomato-Mango cluster

The Horticulture Department FPOs handles 90 MT of annual produce volume with transactions valued at ₹120 lakh (FY 23–24) for major fruits and vegetables

The Watershed Development Department FPOs includes 58 FPOs with transactions valued at ₹18 crores (FY 23–24) across key crops such as Banana, Mango, Tomato, Pomegranate including major fruits and vegetables

A total of 9 Self-Help Groups (SHGs) are engaged in natural food production

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *Directorate of horticulture – Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *KSRLPS - SHGs*

Challenge category 4: Community-led aggregation and enterprise innovations

East Karnataka Tomato-Mango cluster

The Horticulture Department FPOs handles...

- **667 MT** of annual produce volume with transactions valued at **₹148 lakh** (FY 23–24) across key crops such as Onion, Mango, Pomegranate
- **698 MT** of annual produce volume with transactions valued at **₹157 lakh** (FY 23-24) for major fruits and vegetables

The Watershed Development Department FPOs includes...

- **22** FPOs with transactions valued at **₹9 crores** (FY 23–24) across key crops such as Grapes, Mango, Tomato, Pomegranate
- **40** FPOs with transactions valued at **₹13 crores** (FY 23-24) for major fruits and vegetables grown like Tomato, Grapes, Cabbage, Mango, Chilli

A total of 12 Self-Help Groups (SHGs) are engaged in natural food production

Northwest Karnataka multi-crop cluster

The Horticulture Department FPOs handles...

- **103 MT** of annual produce volume with transactions valued at **₹31 lakh** (FY 23–24) across key crops such as Onion, Banana
- **133 MT** of annual produce volume with transactions valued at ₹**33 lakh (**FY 23-24) for major fruits and vegetables

The Watershed Development Department FPOs includes...

- **14** FPOs with transactions valued at **₹7 crores (**FY 23–24) across key crops such as Banana
- **48** FPOs with transactions valued at **₹33 crores (**FY 23-24) for major fruits and vegetables grown like Banana, Soyabean, Chilli

A total of 9 Self-Help Groups (SHGs) are engaged in natural food production

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *Directorate of horticulture – Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *KSRLPS - SHGs*

Challenge category 4: Community-led aggregation and enterprise innovations

Western Ghats Banana-Pineapple cluster

The Horticulture Department FPOs handles...

- **144 MT** of annual produce volume with transactions valued at **₹374 lakh** (FY 23–24) across key crops such as Pomegranate, Pineapple
- **227 MT** of annual produce volume with transactions valued at **₹607 lakh** (FY 23-24) for major fruits and vegetables grown like Pineapple, Rose onion, Pomegranate, Jackfruit

The Watershed Development Department FPOs includes...

- **16** FPOs with transactions valued at **₹19 crores** (FY 23–24) across key crops such as Pineapple, Banana, Tomato
- **25** FPOs with transactions valued at **₹22 crores** (FY 23-24) for major fruits and vegetables grown like Banana, Tomato, Pineapple

A total of 29 Self-Help Groups (SHGs) are engaged in natural food production

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *Directorate of horticulture – Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *KSRLPS - SHGs*

Challenge category 5: Innovative Financial Access Solutions

FPOs often face persistent challenges in accessing adequate and timely credit across all stages of their growth trajectory*.

*20 - 22% of Karnataka's horticulture produce is lost post-harvest, directly attributed to absence of financed cold chain, pack-houses, and transport***

*30.3% of indebted agricultural households in India rely exclusively on informal moneylenders for credit , paying rates far above institutional lenders****

Key Government Schemes Supporting Agri-Tech Entrepreneurs in Karnataka

Agriculture Infrastructure Fund (AIF)

- ₹1 lakh crore national financing facility for post-harvest infrastructure
- 3% interest subvention on loans up to ₹2 crore
- Credit guarantee support for warehouses, cold storage, pack houses, and logistics infrastructure
- Supports warehouse receipt financing and FPO working capital models

PM Formalisation of Micro Food Processing Enterprises (PMFME)

- ₹10,000 crore scheme (2020 - 2025) with 35% credit-linked subsidy up to ₹10 lakh for individuals, ₹3 crore for FPOs, SHGs, and cooperatives
- ₹40,000 seed capital per SHG member; 50% support for group-based branding and marketing
- Supports processing, aggregation, value addition, and post-harvest enterprises across horticulture value chains

ELEVATE (GoK Startup Scheme)

- Karnataka Govt grants up to Rs.50 Lakh for early-stage startups.
- Includes mentoring, VC network access and incubation support.
- Special ELEVATE Unnati track for SC/ST founders.
- Agri-fintech and digital financial inclusion solutions are eligible under the program

NABARD: FPO Credit + e-NWR

- Credit guarantee up to Rs.1.5 Cr for FPOs (85% coverage).
- e-Negotiable Warehouse Receipts (e-NWR) enable post-harvest collateral loans.
- NABVENTURES equity funding available for agri-fintech startups.
- Credit Guarantee Scheme for e-NWR-based pledge financing has a ₹1,000 crore corpus to support post-harvest lending

RKVY-RAFTAAR (Central)

- Grants up to Rs.25 Lakh for agri-tech startups at seed stage via ICAR/MANAGE incubators.
- Covers fintech, digital lending and market platforms.
- RKVY Agribusiness Incubators (R-ABIs) active across Karnataka.

Sources:

- **Dvara Research and NAFPO. Credit Demand of FPOs: A Credit Market Estimation Exercise. Chennai: Dvara Research, 2025*
- ***NABARD, State Focus Paper 2025-26: Karnataka*
- ****NABARD, All India Rural Financial Inclusion Survey (NAFIS) 2020-22*

Challenge category 6: Digital decision systems for food loss reduction

This challenge category seeks to develop solutions that improve real-time visibility and decision-making across the post-harvest value chain, enabling farmers, FPOs, and other stakeholders to better manage volumes, quality, pricing, storage, and logistics during peak harvest periods.

The existing digital platforms and tools:

Rashtriya e-Market Services (ReMS)

01

Karnataka's unified digital agricultural market platform that supports transparent price discovery, online trading, and market information systems.

FPO market platform

02

A Karnataka-focused unified market platform launched through collaboration between KAPPEC, NABARD, the Watershed Development Department, and the Horticulture Department to support online trading by FPOs.

FPO India portal

03

Provides digital tools for market intelligence, logistics coordination, real-time price visibility, government scheme integration, and financial access for FPOs.

BE-AgSmart platform

04

An AI-driven digital agriculture platform recognized by the Government of Karnataka that includes inventory management, weather forecasting, dashboards, and farm management systems to improve decision-making and reduce losses.

NABARD

05

Includes support for storage, logistics, and market linkage systems that improve post-harvest coordination and information access.

KAPPEC

06

Supports horticulture value chains through aggregation, market connectivity, and digital trade systems.

Challenge category 7: Circular economy and loss-to-value solutions

This challenge category aims to develop solutions that create structured secondary-use pathways for surplus, off-grade, and rejected horticulture produce, reducing waste and enabling better value realization during peak harvest periods.

Onion

- Off-grade and surplus onions lost to improper curing, high moisture, and price-driven storage can be converted into dehydrated powder, flakes, paste, and juice for the food industry.
- Onion skins, typically discarded, are rich in quercetin with proven pharmaceutical and nutraceutical applications.

Mango

- Blemished and surplus mangoes can be converted into pulp, puree, and pickles, reducing dependence on volatile fresh market pricing.
- The peel, comprising 25–40% of fruit weight, yields pectin, carotenoids, and mango butter for cosmetic and pharmaceutical use, with India-specific biorefinery studies confirming positive net present values for integrated processing.

Sources: *https://www.researchgate.net/publication/237014154_Onion_dehydration_A_review, https://www.sciencedirect.com/science/article/abs/pii/S2589014X25000763 , https://www.nature.com/articles/s41598-025-28141-z , https://link.springer.com/article/10.1186/s44316-026-00054-5*

Challenge category 7: Circular economy and loss-to-value solutions

Pomegranate

- Cracked and blight-affected pomegranates with no current secondary-use pathway can be juiced or dried, preventing total economic loss for North and Central Karnataka farmers.
- The peel, comprising 30 - 40% of fruit weight, contains punicalagin among the highest polyphenol concentrations of any fruit by-product with demonstrated commercial value in pharmaceuticals, food preservation, and natural dyes and a tested model already exists for extracting it at FPO scale without large capital investment.

Grapes

- Off-grade grapes damaged by gray mold and moisture loss can be converted into raisins and juice.
- Grape pomace from pressing yields polyphenols, grape seed oil, and tartaric acid with applications across food, nutraceutical, and pharmaceutical markets.

Tomato

- Surplus and damaged tomatoes can be converted into puree, paste, and juice.
- Residual biomass can further feed anaerobic digesters for biogas, creating a near-zero-waste processing model suitable for East Karnataka clusters.

Sources: *https://pmc.ncbi.nlm.nih.gov/articles/PMC9455765/ , https://pmc.ncbi.nlm.nih.gov/articles/PMC11767471/ , https://pmc.ncbi.nlm.nih.gov/articles/PMC11202697/ , https://pubs.acs.org/doi/10.1021/acs.iecr.4c00125*

Challenge category 7: Circular economy and loss-to-value solutions

Pineapple

- Bromelain extraction from the core and peel which are richer in the enzyme than the edible pulp offers the highest-value circular output, with a zero-waste Queen Pineapple biorefinery study in India confirming simultaneous bromelain recovery and biosorbent production as directly replicable at cluster level.

Banana

- Over-ripe and damaged bananas can be converted into pulp, powder, and chips.
- The pseudo stem generating nearly 3 tonnes of waste per tonne harvested yields biogas, bioethanol, and organic fertilizer.
- India leads 35% of global banana pseudo stem valorization research, confirming strong technical readiness for FPO-level adoption.

Sources: *https://pmc.ncbi.nlm.nih.gov/articles/PMC8434441/ , https://www.sciencedirect.com/science/article/abs/pii/S2352550921003614 , https://link.springer.com/article/10.1007/s13399-024-05617-y , https://www.sciencedirect.com/science/article/pii/S2772753X2300237X , https://link.springer.com/article/10.1007/s13399-024-05617-y*

Challenge category 7: Circular economy and loss-to-value solutions

Karnataka produces over 98 lakh MT of key horticulture crops annually, yet local processing units can absorb only a fraction of this output.

Across all 7 clusters, most produce exits the cluster through fragmented supply chains, resulting in significant resource inefficiencies, avoidable waste, and loss of value across the system.

North Karnataka Onion-Grape-Raisin-Pomegranate cluster

KEY CROPS PRODUCTION
3.13 million MT

LOCAL PROCESSING CAPACITY
0 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0%

REMAINING SHARE
100%

Central Karnataka Onion-Pomegranate cluster

KEY CROPS PRODUCTION
1.40 million MT

LOCAL PROCESSING CAPACITY
0 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0%

REMAINING SHARE
100%

Kalyana Karnataka Onion-Tomato cluster

KEY CROPS PRODUCTION
0.34 million MT

LOCAL PROCESSING CAPACITY
0 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0%

REMAINING SHARE
100%

South Karnataka Banana-Tomato-Mango cluster

KEY CROPS PRODUCTION
1.80 million MT

LOCAL PROCESSING CAPACITY
4500 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0.25%

REMAINING SHARE
99.75%

East Karnataka Tomato-Mango cluster

KEY CROPS PRODUCTION
2.34 million MT

LOCAL PROCESSING CAPACITY
9,65,338 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
41.25%

REMAINING SHARE
58.75%

Northwest Karnataka multi-crop cluster

KEY CROPS PRODUCTION
0.46 million MT

LOCAL PROCESSING CAPACITY
944 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0.21%

REMAINING SHARE
99.79%

Western Ghats Banana-Pineapple cluster

KEY CROPS PRODUCTION
0.39 million MT

LOCAL PROCESSING CAPACITY
1073 MT/yr

ESTIMATED % GOING TO LOCAL PROCESSING
0.28%

REMAINING SHARE
99.72%

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Horticulture crop statistics of Karnataka state at a glance – 2023-24 - Production*

Core Partners
gain
NUTRITION CONNECT
TTC
ABWCI
Communication and Digital Partner
FORTUNA PR
Event Partner
MM ACTIV Sci-Tech Communications
Supporting Partner
Krishi Kalpa

Challenge category 7: Circular economy and loss-to-value solution

In 6 out of 7 clusters, over 99% of production has no local processing absorption, it enters open logistics chains with no coordination, no cold chain, and no guaranteed market leading to limited aggregation, preservation, or resource utilisation. Even in East Karnataka, where 41.25% of produce is linked to processing ecosystems, more than half still exits the cluster without opportunities for by-product utilization or value recirculation.

Assumptions:

- Processing units are assumed to operate at 100% of their reported annual capacity.
- Each unit's capacity is counted once per year (single annual cycle).
- “Local processing capacity” refers to the capacity attributable to the seven key crops and was estimated by applying each cluster's share of key crop production in total fruits and vegetables production to the total reported cluster processing capacity
- "Remaining share" represents the percentage of key crop production not absorbed by local processing units, and is assumed to move to open markets, direct consumption, processing in other clusters, or processing in other states.

Challenge category 7: Circular economy and loss-to-value solutions

Policies & schemes

Agriculture Infrastructure Fund (AIF)

- AIF supports development of infrastructure to convert agricultural waste into value, complementing circular economy and waste-to-wealth approaches across the agriculture and allied sectors.
- Provides interest subvention of 3% per annum on loans up to ₹2 crore for post-harvest management infrastructure including primary processing units, sorting, grading, and cold storage, directly enabling secondary-use facility creation at farm and FPO level.

Source: MoAFW. Agriculture Infrastructure Fund

Operation Greens - TOP to TOTAL

- Launched in Union Budget 2018-19 to develop the Tomato, Onion, and Potato (TOP) value chain, then expanded under Aatmanirbhar Bharat in June 2020 to cover all fruits and vegetables (TOTAL).
- The objective is to protect growers from distress sales and reduce post-harvest losses, with a 50% subsidy on transportation of eligible crops from surplus production clusters to consumption centres, and hiring of storage facilities for up to three months when prices fall below the three-year average market price.

Source: MoFPI. Operation Greens Scheme

GOBARdhan Scheme - Waste to Wealth / Biogas

- GOBARdhan brings together multiple ministries to convert cattle dung, crop residues, and food waste into compressed biogas (CBG) and organic manure; in 2023, the government launched the Unified GOBARdhan Portal to enhance transparency.
- Under Union Budget 2023-24, 500 new waste-to-wealth plants were announced including 200 compressed biogas plants and 300 community or cluster-based plants at a total investment of ₹10,000 crore, with a 5% CBG mandate introduced for all organisations marketing natural and bio gas.

Source: PIB, GoI. "Circular Economy in Agriculture: Waste to Wealth."

Annexures

Core Partners

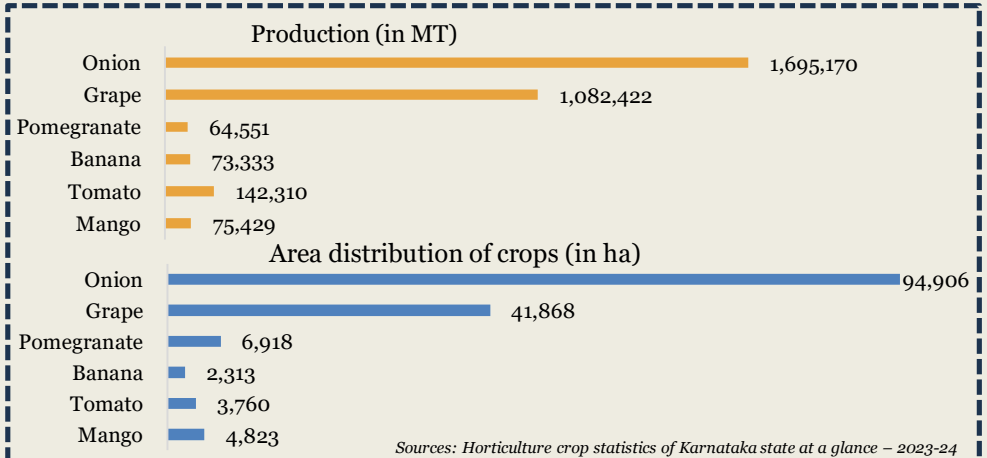
Communication and Digital Partner

Event Partner

Supporting Partner

North Karnataka Onion-Grape-Raisin-Pomegranate cluster

(Vijayapura, Belagavi, Bagalkot, Gadag)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production 31,33,277 MT

Total production 40,84,375 MT

Major reasons for crop-loss across districts

Grape (Bagalkote, Belagavi): Gray mold, moisture loss, no pre-cooling/cold chain

Pomegranate (Bagalkote, Gadag): Bacterial blight, wilt, shriveling from moisture loss

Onion (Bagalkote): Poor curing, high moisture bulbs, lack of storage

Banana (Gadag): Labour shortage, poor handling, lack of ripening/storage

Mango (Belagavi): Weather stress, fruit fly and fungal diseases

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

1,11,359 MT capacity
Cold storage units
Key crops: Grapes, Pomegranate

42 FPOs
WDD FPOs
₹ 11 Cr total transactions in FY 23-24
Key crops: Banana, Onion, Tomato

23 MT
Horticulture Department FPOs
₹89,03,000 transactions in FY 23-24
Key crops: Grapes, Pomegranate

Ecosystem for all fruits and vegetables

1,31,996 MT capacity
Cold storage units
Key crops: Lemon, Vegetables and fruits, Potato, Beetroot
Upcoming units: Vijayapura -12000 MT

64 FPOs
WDD FPOs
₹ 19 Cr total transactions in FY 23-24
Key crops: Banana, Onion, Tomato, Vegetables

1553 MT
Horticulture Department FPOs
₹24,60,25,000 transactions in FY 23-24
Key crops: Onion, Lemon, Sweet Potato

Other infrastructure available

7 centers
Seed production centers
70 ha total

45 farms
Horticulture farms & nurseries
692 acres

Agricultural training centers
Bagalkote, Vijayapura, Belagavi

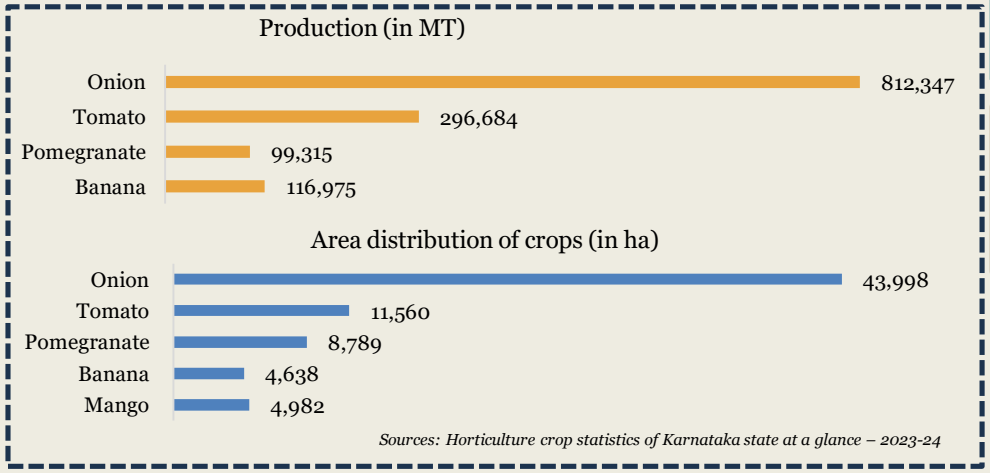
55
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

Central Karnataka Onion-Pomegranate cluster

(Chitradurga, Davanagere, Koppal, Ballari, Vijayanagara)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production
13,98,113 MT

Total production
18,85,113 MT

Major reasons for crop-loss across districts

Onion (Chitradurga): Improper curing, lack of storage facilities, prolonged storage due to market price fluctuation

Pomegranate (Chitradurga): Sun scorching, bacterial blight, fruit cracking, poor handling during transport

Banana (Chitradurga, Ballari): Sun scorching, lack of bunch covering, bruising during harvest, lack of pre-cooling

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

6269MT capacity
Cold storage units
Key crops: Mango, Onion, Grapes, Pomegranate

58 FPOs
WDD FPOs
₹ 23 Cr total transactions in FY 23-24
Key crops: Onion, Pomegranate, Tomato

Ecosystem for all fruits and vegetables

2,47,252 MT capacity
Cold storage units
Key crops: Gherkin, Vegetables and fruits, Grape, Potato, Pomegranate, Onion, Mango

62 FPOs
WDD FPOs
₹ 29 Cr total transactions in FY 23-24
Key crops: Banana, Tomato, Sugarcane, Onion, Pomegranate

216 MT
Horticulture Department FPOs
₹48,10,000 transactions in FY 23-24

Other infrastructure available

11 centers
Seed production centers
241 ha total

45 farms
Horticulture farms & nurseries
1324 acres

Agricultural training centers
Chitradurga, Davanagere, Ballari, Koppal

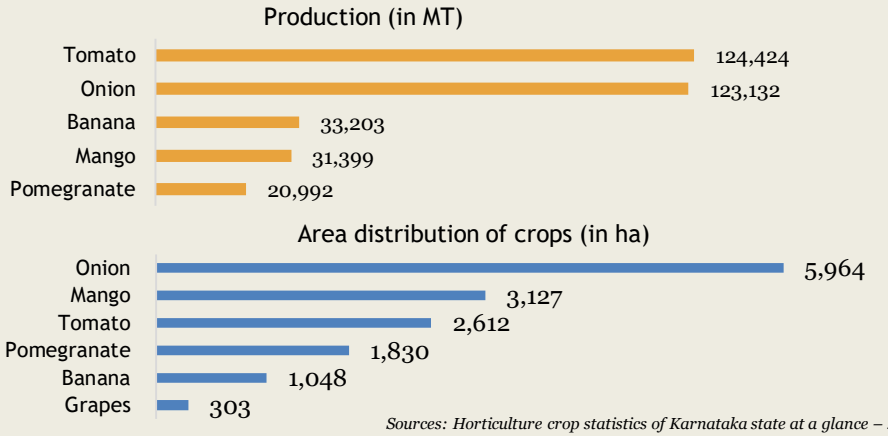
18
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

Kalyana Karnataka Onion-Tomato cluster

(Raichur, Yadgiri, Kalaburagi, Bidar)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production 3,38,030 MT

Total production 7,57,643 MT

Major reasons for crop-loss across districts

Pomegranate (Raichur, Yadgir): Bacterial blight, wilt, poor market access and storage facilities

Mango (Raichur, Bidar): Unseasonal rains, mango hoppers, price crash, poor harvesting practices

Onion (Yadgir, Bidar): Purple blotch, bulb rotting, mechanical damage, lack of storage infrastructure

Banana (Kalaburagi): Poor post-harvest handling, over-ripening, poor packing

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

6121 MT capacity
Cold storage units
Key crops: Grapes, Pomegranate

20 FPOs
WDD FPOs
₹ 2 Cr total transactions in FY 23-24
Key crops: Onion, Pomegranate

1145 MT
Horticulture Department FPOs
₹35,76,288 transactions in FY 23-24
Key crops: Onion, Tomato

Ecosystem for all fruits and vegetables

1,28,573 MT capacity
Cold storage units
Key crops: Vegetables and fruits, Grape, Potato, Pomegranate

41 FPOs
WDD FPOs
₹ 13 Cr total transactions in FY 23-24
Key crops: Soyabean, Onion, Pomegranate

1241 MT
Horticulture Department FPOs
₹1,23,28,688 transactions in FY 23-24
Key crops: Watermelon, Tomato, Cabbage, Onion, Guava

Other infrastructure available

9 centers
Seed production centers
70 ha total

47 farms
Horticulture farms & nurseries
1154 acres

Agricultural training centers

Bidar, Kalaburagi, Raichur

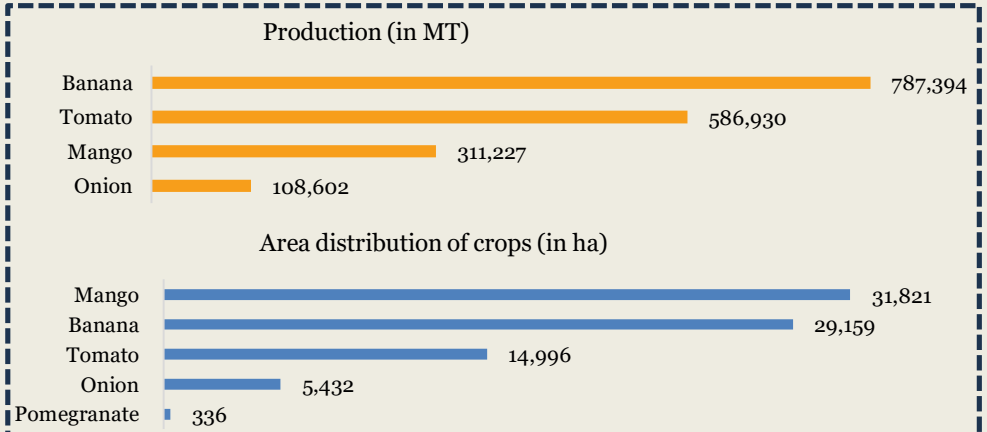
16
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

South Karnataka Banana-Tomato-Mango cluster

(Mysuru, Mandya, Chamarajanagara, Hassan, Ramanagara)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production
17,97,775 MT

Total production
22,88,467 MT

Major reasons for crop-loss across districts

Banana (Mysuru, Chamarajanagara): Improper harvesting, lack of disease-free planting material, rough handling during collection, lack of ventilated transport, poor sorting and grading

Mango (Mysuru): Unseasonal rainfall, hailstorms, lack of processing infrastructure, price fluctuation

Onion (Mandya): Time-consuming grading, size variation challenges, non-availability of nearby market

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

9142 MT capacity
Cold storage units
Key crops: Banana, Mango

58 FPOs
WDD FPOs
₹ 18 Cr total transactions in FY 23-24
Key crops: Banana, Mango, Tomato, Pomegranate

4500 MT/yr capacity
Processing infrastructure
Key crops: Mango, Banana

Ecosystem for all fruits and vegetables

78,692 MT capacity
Cold storage units
Key crops: Banana, Vegetables and fruits, Citrus, Fruit pulp
Upcoming units: Hassan -2000 MT, Mandya-2000 MT

58 FPOs
WDD FPOs
₹ 18 Cr total transactions in FY 23-24
Key crops: Banana, Mango, Tomato, Pomegranate, Chilli

5460 MT/yr capacity
Processing infrastructure
Key crops: Mango, Banana

90 MT
Horticulture Department FPOs
₹1,20,47,000 transactions in FY 23-24

Other infrastructure available

5 centers
Seed production centers
46 ha total

93 farms
Horticulture farms & nurseries
4433 acres

Agricultural training centers
Hassan, Mandya, Mysuru

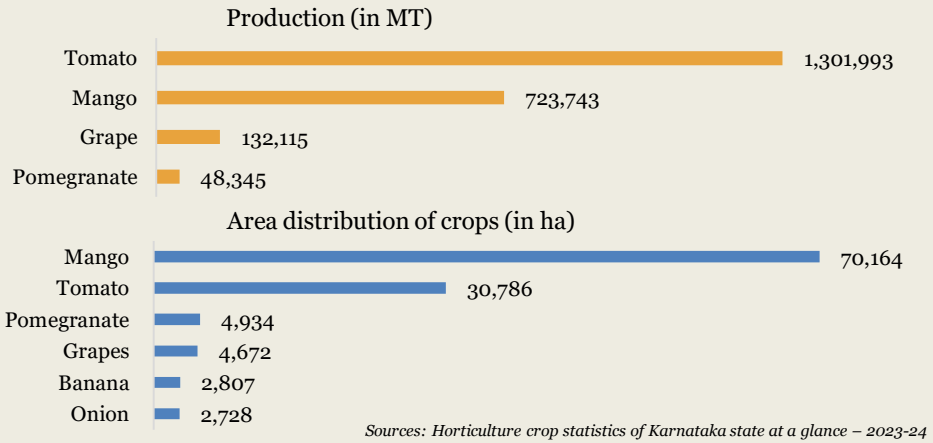
9
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

East Karnataka Tomato-Mango cluster

(Kolar, Chikkaballapura, Bengaluru (urban), Bengaluru (rural), Tumakuru)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production
23,40,200 MT

Total production
33,90,501 MT

Major reasons for crop-loss across districts

Mango (Kolar, Chikkaballapura, Bengaluru Rural, Bengaluru Urban, Tumakuru): Incorrect maturity at harvest, mechanical injury, unseasonal rainfall, sooty mould, mealy bugs, price volatility

Pomegranate (Chikkaballapura): Bacterial blight, anthracnose, fruit cracking, improper handling and lack of cold chain infrastructure

Tomato (Bengaluru Urban): Unseasonal rainfall, pest and disease, supply chain gaps, poor processing infrastructure

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

14,832 MT capacity
Cold storage units
Key crops: Tomato

22 FPOs
WDD FPOs
₹ 9 Cr total transactions in FY 23-24
Key crops: Grapes, Mango, Tomato, Pomegranate

9,65,338 MT/yr capacity
Processing infrastructure
Key crops: Banana, Grapes, Mango, Tomato, Pomegranate

667 MT
Horticulture Department FPOs
₹1.48 crores transactions in FY 23-24
Key crops: Onion, Pomegranate, Mango

Ecosystem for all fruits and vegetables

46,982 MT capacity
Cold storage units
Key crops: Cut rose, Vegetables and fruits, Fruit pulp
Upcoming units: Kolar -2000 MT

40 FPOs
WDD FPOs
₹ 13 Cr total transactions in FY 23-24
Key crops: Tomato, Grapes, Cabbage, Mango, Chilli, Vegetables

10,02,890 MT/yr capacity
Processing infrastructure
Key crops: Banana, Grapes, Mango, Tomato, Pomegranate, Papaya, Guava

698 MT
Horticulture Department FPOs
₹1.57 crores transactions in FY 23-24
Key crops: Fruits and vegetables, Ridge gourd

Other infrastructure available

7 centers
Seed production centers
86 ha total

54 farms
Horticulture farms & nurseries
4383 acres

Agricultural training centers
Chikkaballapura, Tumakuru

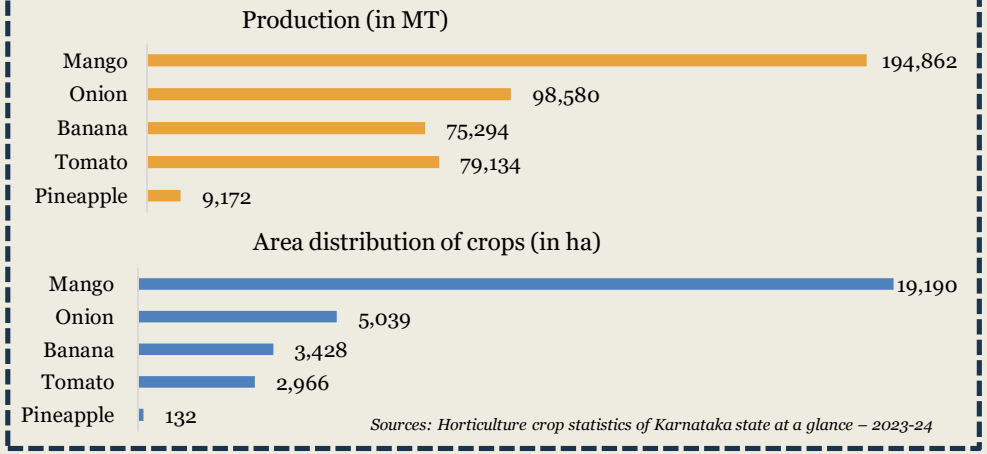
12
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

Northwest Karnataka multi-crop cluster

(Dharwad, Haveri, Uttara Kannada)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production
4,57,084 MT

Total production
5,94,433 MT

Major reasons for crop-loss across districts

Mango (Dharwad): Pest and disease, lack of farm-level storage, wholesale price crash due to simultaneous large output

Onion (Dharwad): Poor field-level grading, lack of cheap packaging material, price reduction and delays by wholesalers

Pineapple (Uttara Kannada): Late harvesting for distant markets, losses during transportation to distant market

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

8022 MT capacity
Cold storage units
Key crops: Banana, Mango

14 FPOs
WDD FPOs
₹ 7 Cr total transactions in FY 23-24
Key crops: Banana

944 MT/yr capacity
Processing infrastructure
Key crops: Pineapple, Banana, Mango

103 MT
Horticulture Department FPOs
₹ 31 lakhs transactions n FY 23-24
Key crops: Onion, Banana

Ecosystem for all fruits and vegetables

1,37,131 MT capacity
Cold storage units
Key crops: Frozen & dry fruits, Vegetables and fruits, Mango pulp
Upcoming units: Haveri -2000 MT

48 FPOs
WDD FPOs
₹ 33 Cr total transactions in FY 23-24
Key crops: Banana, Soyabean, Chilli, Vegetables

2160 MT/yr capacity
Processing infrastructure
Key crops: Banana, Okra, Guava, Mango, Pineapple, Papaya, Mixed fruits

133 MT
Horticulture Department FPOs
₹33 lakhs transactions in FY 23-24
Key crops: Onion, Banana

Other infrastructure available

2 centers
Seed production centers
10 ha total

41 farms
Horticulture farms & nurseries
449 acres

Agricultural training centers
Dharwad, Haveri, Uttara Kannada

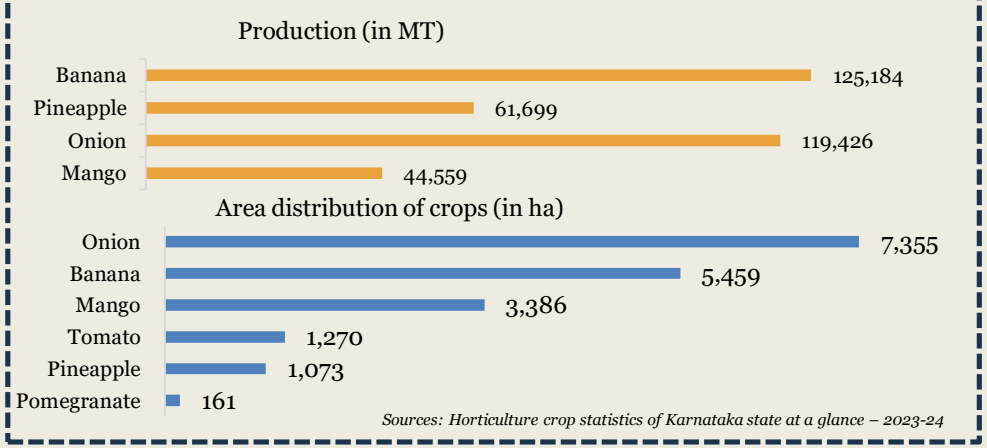
9
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

Western Ghats Banana-Pineapple cluster

(Shivamogga, Chikkamagaluru, Kodagu, Dakshina Kannada, Udupi)



Sources: Horticulture crop statistics of Karnataka state at a glance – 2023-24

Crop-specific production
3,85,995 MT

Total production
5,69,568 MT

Major reasons for crop-loss across districts

Banana (Shivamogga, Chikkamagaluru): Pest and disease incidence, wild animal damage, natural calamities, lack of skilled labour, high storage and transportation losses

Pineapple (Udupi): Pest and disease, natural calamities, delayed harvesting for distant markets, variety not suitable for processing causing total loss during gluts

Source: As reported by district officials, Horticulture department, Government of Karnataka, as of March 2026

Crop-specific ecosystem (seven key crops)

4917 MT capacity
Cold storage units
Key crops: Pineapple, Banana, Mango

16 FPOs
WDD FPOs
₹ 19 Cr total transactions in FY 23-24
Key crops: Banana, Pineapple, Tomato

1073 MT/yr capacity
Processing infrastructure
Key crops: Pineapple, Banana, Mango

144 MT
Horticulture Department FPOs
₹ 3.74 crores transactions in FY 23-24
Key crops: Pomegranate, Pineapple

Ecosystem for all fruits and vegetables

12,230 MT capacity
Cold storage units
Key crops: Banana, Jackfruit, Mango, Pineapple
Upcoming units: Shivamogga -4000 MT

25 FPOs
WDD FPOs
₹ 22 Cr total transactions in FY 23-24
Key crops: Banana, Pineapple, Tomato, Vegetables

1200 MT/yr capacity
Processing infrastructure
Key crops: Banana, Jackfruit, Mango, Pineapple

227 MT
Horticulture Department FPOs
₹6.07 crores transactions in FY 23-24
Key crops: Pineapple, Rose onion, Pomegranate, Jackfruit

Other infrastructure available

7 centers
Seed production centers
86 ha total

56 farms
Horticulture farms & nurseries
1732 acres

Agricultural training centers

Shivamogga, Chikkamagaluru, Dakshina Kannda, Kodagu

29
SHGs

Sources: As per the internal data shared by the following departments under Government of Karnataka, as of March 2026:

- *KAPPEC – Processing infrastructure*
- *Directorate of horticulture – Cold storage infrastructure, Horticulture farms/nurseries, Horticulture department FPOs*
- *Watershed development department – WDD FPOs*
- *Department of agriculture – Seed production centers, Agricultural training centers*
- *KSRLPS - SHGs*

Cluster Methodology Note

District-level production data and infrastructure records collected from multiple Karnataka government departments were analysed across all 31 districts to identify where crop specialization and processing capacity gaps coincide. Using a Location Quotient (LQ) approach to measure each district's relative crop concentration against the state average, and applying geographic contiguity as a binding constraint, the 31 districts were grouped into 7 clusters. Each cluster has a distinct crop identity confirmed by its LQ profile.

METHODOLOGICAL FRAMEWORK - THREE CRITERIA APPLIED IN SEQUENCE

01

Geographic Contiguity (Hard Constraint)

Applied first, before any crop or infrastructure analysis. Every district in a cluster must share a physical border with at least one other district in that cluster. Non-contiguous groupings were not considered regardless of crop similarity. This constraint reflects the way agro-climatic zones vary across Karnataka - the Deccan plateau, the Hyderabad-Karnataka belt, and the Western Ghats produce distinct production zones that broadly respect district boundaries.

02

Crop Specialisation: Location Quotient (LQ)

LQ(i,c) = [Production of crop c in district i ÷ Total 7-crop production in district i] ÷ [State production of crop c ÷ Total state 7-crop production]

LQ > 1.0 = relative specialisation. LQ ≥ 1.5 = meaningful specialisation (threshold used here). LQ ≥ 2.0 = strong specialisation. Districts with similar LQ profiles were grouped together within the contiguity constraint.

Methodological basis: Florence (1939), Isard (Methods of Regional Analysis, MIT Press, 1960). Used equivalently in India's PM-FME One District One Product framework (MoFPI, 2020), NITI Aayog Aspirational Districts Programme, and FAO Territorial Approaches to Food Security (2021).

03

Produce Flow and Market Orientation (Tiebreaker)

Where a district sat at the boundary of two plausible clusters, assignment was determined by the direction of natural produce flow - toward the nearest processing hub, cold chain facility, or APMC market. For example, Tumakuru's tomato and mango produce flows toward Bengaluru-area processors (C5), not toward the Chitradurga-Ballari belt (C2), even though its pomegranate LQ (2.72) could suggest a C2 affinity.

VALIDATION: All 7 clusters have cluster-level LQ ≥ 1.5 for their primary crop. All 31 districts assigned with no overlaps. Every cluster is geographically contiguous.

Cluster Formation: Step-by-Step

C1

North Karnataka Onion-Grape-Raisin-Pomegranate Belt

Anchor: Vijayapura

Vijayapura anchors C1 with a grape LQ of 3.88 (8,68,590 MT - largest single-district grape production in the state) and onion LQ of 1.60 (8,80,943 MT). Bagalkote drew in on onion LQ 2.56 and grape LQ 0.92, with direct border adjacency to Vijayapura. Gadag joined on onion LQ 2.81, bordering both Vijayapura and Bagalkote. Belagavi was included because of its grape LQ 2.60 (1,37,381 MT), directly linking to the raisin processing value chain.

C2

Central Karnataka Onion-Pomegranate Belt

Anchor: Vijayanagara / Ballari / Chitradurga

Formed around the contiguous block of Chitradurga (pom. LQ 2.20, onion LQ 2.12), Koppal (pom. LQ 1.81, onion LQ 1.86), and Vijayanagara (pom. LQ 6.15, onion LQ 1.79). Ballari joined on its pomegranate LQ (7.16) and border with Vijayanagara. Davanagere was pulled in on onion LQ 1.37 and pomegranate LQ 1.51, bordering Chitradurga and Ballari.

C3

Kalyana Karnataka Onion-Tomato Zone

Anchor: Raichur

Raichur (pom. LQ 10.87), Yadgir, Kalaburagi, and Bidar are all part of the Kalyana Karnataka special development region - contiguous, with shared administrative and geographic character. Combined tomato (1.24 lakh MT, LQ 1.41) and onion (1.23 lakh MT, LQ 1.19) define the cluster. The pomegranate concentration in Raichur and Yadgir is a secondary specialisation.

C4

South Karnataka Banana-Tomato-Mango Hub

Anchor: Mysuru / Chamarajanagara

Mysuru (banana LQ 4.27, 4,28,942 MT) and Chamarajanagara (banana LQ 4.32, 2,96,817 MT) are the production anchors. Mandya joined for tomato LQ 2.68 (1,35,730 MT) and border with both. Ramanagara was included for its near-total mango specialisation (LQ 6.67, 2,52,060 MT) and border with Mandya. Hassan joined on banana LQ 3.71 and tomato LQ 1.25, contiguous with Mandya and Mysuru.

C5

East Karnataka Tomato-Mango Processing Belt

Anchor: Kolar / Chikkaballapura

Kolar (tomato LQ 2.36, mango LQ 2.54) and Chikkaballapura (tomato LQ 2.33) form the production core. Bengaluru Urban was included as the largest processing and consumption hub in the state. Bengaluru Rural (grape LQ 2.01, mango LQ 2.92) links outer production zones to this hub. Tumakuru joined on tomato LQ 2.03 and mango LQ 1.98; the India Food Park (Tumakuru) processes F&V for the same market as the Kolar-Bengaluru belt.

C6

Northwest Karnataka Multi-Crop Zone

Anchor: Dharwad

Dharwad anchors C6 with mango LQ 3.52 (1,07,136 MT) and existing food processing infrastructure at UAS Dharwad. Haveri joined on mango LQ 2.44 (60,396 MT) and tomato LQ 1.51, directly bordering Dharwad. Uttara Kannada was included on mango LQ 2.27 and its coastal port access at Karwar, giving the cluster a marine export route for processed products.

C7

Western Ghats Banana-Pineapple Corridor

Anchor: Shivamogga

Shivamogga anchors C7 with pineapple LQ 47.75 (55,960 MT - nearly all of the state's pineapple) and banana LQ 3.57 (75,921 MT). Udupi (pineapple LQ 60.76) and Dakshina Kannada (pineapple LQ 8.54, banana LQ 6.92) were added for their pineapple and banana specialisation. Kodagu (banana LQ 7.35) and Chikkamagaluru complete the corridor - Chikkamagaluru's assignment is discussed in the border district slide despite its onion LQ of 2.16, because it is ecologically and geographically part of the Western Ghats zone.

Border District Rationale

District	Assigned	Alternative considered	Key LQ values	Rationale for assignment
Mysuru	**C4**	C5	*Banana 4.27 | Tomato 1.54*	Mysuru produces 4,28,942 MT banana against 3,07,208 MT tomato (LQ 1.54). Banana LQ is nearly 3× the tomato LQ. C5 has a banana LQ of only 0.25 - almost no banana character. Same Old Mysore administrative belt as Mandya and Chamarajanagara.
Ramanagara	**C4**	C5	*Mango 6.67 | Tomato 0.04*	Mango (2,52,060 MT) accounts for 98.3% of 7-crop production; mango LQ 6.67. C5 also has mango LQ 2.10, but Ramanagara shares a border with Mandya (C4), not Kolar or Chikkaballapura. Old Mysore administrative linkage.
Hassan	**C4**	C7	*Banana 3.71 | Tomato 1.25 | Pineapple 0.00*	No pineapple at all. Banana LQ 3.71 aligns with C4. Borders Mandya and Mysuru. Placing it in C7 would geographically fragment C4 and create a non-contiguous Western Ghats cluster.
Tumakuru	**C5**	C2	*Tomato 2.03 | Mango 1.98 | Pomegranate 2.72*	Pomegranate LQ 2.72 might suggest C2, but tomato (2,18,022 MT, LQ 2.03) and mango (1,19,604 MT, LQ 1.98) dominate. Tumakuru sits on NH-48; produce flows toward Bengaluru processors, not toward the Chitradurga-Ballari belt.
Belagavi	**C1**	C6	*Grape 2.60 | Tomato 1.01*	Grape LQ 2.60 (1,37,381 MT) aligns with C1's grape-onion-raisin identity. C6 has zero grape production. Raisin processing rationale that defines C1 applies directly to Belagavi's grape belt.
Davanagere	**C2**	C6	*Pomegranate 1.51 | Onion 1.37 | Mango 0.57*	Pomegranate LQ 1.51 and onion LQ 1.37 match C2 character. Mango LQ 0.57 (well below 1.0) gives no pull toward C6. More accessible to Ballari and Chitradurga markets than to Dharwad-Hubballi.
Haveri	**C6**	C1	*Mango 2.44 | Tomato 1.51 | Grape 0.00*	Grows no grape; onion LQ only 0.25. Highest LQ is mango (2.44), followed by tomato (1.51) and banana (1.28) - none are C1 crops. Dharwad Division administrative linkage and direct connection to Dharwad city.
Uttara Kannada	**C6**	C7	*Pineapple 14.17 | Banana 4.26 | Mango 2.27*	Does not border any C7 district - borders Dharwad and Haveri (C6). Pineapple volume is only 8,350 MT against Shivamogga's 55,960 MT; too small to anchor C7. Karwar port gives C6 its coastal export route.
Chikkamagaluru	**C7**	C2	*Onion 2.16 | Banana 0.70 | Pineapple 0.00*	Onion LQ 2.16 is the highest, which on crop specialisation alone could suggest C2. Overriding factors: entirely within Western Ghats agro-ecological zone; borders Shivamogga and Kodagu (C7); does not border any C2 district. Onion production occurs in semi-arid eastern taluks within an otherwise Ghats-dominated geography.

LQ values above 1.5 indicate meaningful specialisation.

Cluster-Level LQ, Validation and References

VALIDATION - THREE CHECKS

Internal crop coherence: All 7 clusters have a cluster-level LQ ≥ 1.5 for their primary crop: C1 Grape 2.78, C2 Pomegranate 2.93, C3 Pomegranate 2.56, C4 Banana 3.35, C5 Tomato 2.14, C6 Mango 2.90, C7 Pineapple 22.19. Cluster names reflect crops with highest LQ, adjusted where a small state total inflates the index (pineapple).

Coverage completeness: All 31 districts of Karnataka are assigned to one of the 7 clusters. The assignment is exhaustive and mutually exclusive.

Geographic contiguity: Each cluster forms a geographically contiguous block. No district is isolated from the rest of its cluster. Verified by tracing district adjacency on the Karnataka district map.

KEY REFERENCES

1	Florence, P.S. (1939). Report on the Location of Industry. Political and Economic Planning, London.
2	Isard, W. (1960). Methods of Regional Analysis: An Introduction to Regional Science. MIT Press. [Original formulation of the Location Quotient for regional specialisation analysis.]
3	Ministry of Food Processing Industries, GoI (2020). PM-FME Scheme Guidelines: One District One Product. [Operationalises district-level crop concentration logic equivalent to LQ.]
4	NITI Aayog (2018 onwards). Aspirational Districts Programme. [Uses sectoral specialisation indices at district level for development prioritisation.]
5	Food and Agriculture Organization (2021). Territorial Approaches to Food and Nutrition Security. FAO, Rome. [Recommends LQ analysis for identifying sub-national agricultural specialisation clusters.]
6	Porter, M.E. (1998). Clusters and the New Economics of Competition. Harvard Business Review, Nov-Dec.

Warehouse infrastructure

Cluster	Warehouses	Capacity (MT)	Average utilisation
North Karnataka Onion · Grape · Raisin · Pomegranate	33	3,72,716	56%
Central Karnataka Onion · Pomegranate	31	4,08,792	38%
Kalyana Karnataka Onion · Tomato	28	4,86,213	64%
South Karnataka Banana · Tomato · Mango	29	3,30,582	47%
East Karnataka Tomato · Mango processing	27	3,16,767	72%
Northwest Karnataka Multi-crop	20	1,92,988	47%
Western Ghats Banana · Pineapple	17	1,86,764	49%

Sources: KSWC, GoK

Horticulture Department FPOs

Cluster	Volume (MT)	Value FY 23-24 (₹)	Major crops
North Karnataka Onion · Grape · Raisin · Pomegranate	1,553	24,60,25,000	Dry chilli, Lemon, Onion, Groundnut oil, Sunflower oil, Safflower oil, Maize, Turmeric
Central Karnataka Onion · Pomegranate	216	48,10,000	Coconut, Maize
Kalyana Karnataka Onion · Tomato	1,242	1,23,28,688	Watermelon, Ginger, Tomato, Cabbage, Pulses, Tur dal, Red gram, Chilli, Onion
South Karnataka Banana · Tomato · Mango	90	1,20,47,000	Turmeric, Coconut
East Karnataka Tomato · Mango processing	698	1,57,93,000	Carrot, Beetroot, Brinjal, Cabbage, Ridge gourd, Rose onion, Maize, Pomegranate, Mango
Northwest Karnataka Multi-crop	133	33,34,428	Coconut, Banana, Onion, Maize
Western Ghats Banana · Pineapple	227	6,07,51,200	Pineapple, Maize, Ginger, Arecanut, Rose onion, Pomegranate, Jackfruit, Honey, Coconut

Sources: Department of horticulture, GoK

Watershed Development Department

All WDD-FPOs engage in input-stage & marketing only

Cluster	FPOs	Post-harvest	Major crops	FY 23-24 (₹ Cr)
North Karnataka Onion · Grape · Raisin · Pomegranate	64	Input + Marketing	Banana, Maize, Wheat, Bengal gram, Redgram, Cotton, Groundnut, Sugarcane, Turmeric, Sunflower, Chilli, Onion, Jowar, Pomegranate, Tomato	19
Central Karnataka Onion · Pomegranate	62	Input + Marketing	Groundnut, Maize, Ragi, Tur, Vegetables, Bengal gram, Onion, Pomegranate, Safflower, Paddy, Arecanut, Banana, Coconut, Cotton, Jowar	29
Kalyana Karnataka Onion · Tomato	41	Input + Marketing	Bengal gram, Green gram, Jowar, Soyabean, Chia, Ginger, Sugarcane, Black gram, Cotton, Chilli, Onion, Redgram, Bajra, Sunflower, Maize, Paddy	13

Sources: Watershed development department, GoK

Watershed Development Department

All WDD-FPOs engage in input-stage & marketing only

Cluster	FPOs	Post-harvest	Major crops	FY 23-24 (₹ Cr)
South Karnataka Banana · Tomato · Mango	58	Input + Marketing	Arecanut, Coconut, Ragi, Banana, Mango, Vegetables, Coffee, Ginger, Groundnut, Maize, Sugarcane, Turmeric, Paddy, Chilli, Tomato, Cotton	18
East Karnataka Tomato · Mango processing	40	Input + Marketing	Arecanut, Coconut, Millets, Tomato, Grapes, Ginger, Cabbage, Vegetables, Flowers, Mango, Chilli, Groundnut, Maize, Ragi, Pomegranate, Cotton	13
Northwest Karnataka Multi-crop	48	Input + Marketing	Arecanut, Banana, Coconut, Ginger, Paddy, Pepper, Turmeric, Groundnut, Bengal gram, Cotton, Green gram, Maize, Soyabean, Sugarcane, Vegetables, Chilli	33
Western Ghats Banana · Pineapple	25	Input + Marketing	Arecanut, Coconut, Ginger, Paddy, Pepper, Banana, Pineapple, Ragi, Maize, Sugarcane, Tomato, Vegetables, Chilli, Turmeric	23

Sources: Watershed development department, GoK

PM-FME beneficiaries

Cluster	Beneficiaries	Finished products manufactured
North Karnataka Onion · Grape · Raisin · Pomegranate	**3,978**	Bakery, Snacks, Oils, Sweets, Groundnut products
Central Karnataka Onion · Pomegranate	**3,582**	Bakery, Snacks, Spices, Millet products
Kalyana Karnataka Onion · Tomato	**1,965**	Bakery, Snacks, Traditional foods
South Karnataka Banana · Tomato · Mango	**4,137**	Snacks, Spices, Nutrimixes, Millet products
East Karnataka Tomato · Mango processing	**2,925**	Snacks, Spices, Bakery, Millet products
Northwest Karnataka Multi-crop	**1,664**	Snacks, Spices, Bakery, Pickles
Western Ghats Banana · Pineapple	**4,046**	Snacks, Spices, Bakery, Nutrimixes, Honey, Pickles, Coconut oil

Sources: KSRLPS, GoK

District-wise trained women report as on DDU-GKY

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is a Government of India skill development program focused on rural youth (18–35 years), aimed at providing industry-relevant training and linking candidates to wage employment.

District	Total trained	Total placed	Women trained	Women placed	Women placement %
Bijapur	2,484	1,376	532	306	58%
Belagavi	2,180	668	642	189	29%
Bagalkot	853	414	433	225	52%
Gadag	1,055	416	417	191	46%
Chitradurga	1,139	694	639	424	66%
Davanagere	1,148	489	543	257	47%
Koppal	1,258	662	548	272	50%
Ballari	2,685	1,618	943	625	66%
Bidar	1,466	484	775	265	34%
Yadgir	843	240	465	128	28%
Raichur	2,753	1,249	1,128	508	45%

Sources: KSRLPS, GoK

District-wise trained women report as on DDU-GKY

District	Total trained	Total placed	Women trained	Women placed	Women placement %
Bangalore	856	477	570	277	49%
Bangalore (rural)	2,259	1,550	1,275	928	73%
Chikkamagaluru	869	369	621	289	47%
Haveri	1,167	645	627	330	53%
Kodagu	404	281	275	190	69%
Udupi	468	164	333	115	35%
Uttara Kannada	1,152	730	747	480	64%

Sources: KSRLPS, GoK

District-wise trained women report as on DDU-GKY

District	Total trained	Total placed	Women trained	Women placed	Women placement %
Mysore	4,192	2,270	2,326	1,311	56%
Mandya	1,380	812	834	490	59%
Chamarajanagar	1,798	906	915	399	44%
Hassan	3,764	2,183	3,332	2,045	61%
Ramanagara	868	486	414	206	50%
Kolar	2,491	1,492	1,659	1,049	63%
Chikkaballapura	3,409	1,571	1,977	907	46%
Tumakur	2,982	1,906	1,827	1,165	64%
Shivamogga	1,973	1,191	1,493	978	65%
Dharwad	2,767	729	1,338	341	25%
Dakshina Kannada	1,034	676	807	536	66%
Gulbarga	6,121	2,472	4,144	1649	40%
Total (all districts)	57,818	29,220	32,579	17,075	52%

Sources: KSRLPS, GoK

Abbreviations

GoK	Government of Karnataka
KAPPEC	Karnataka State Agricultural Produce Processing and Export Corporation Limited
FPO	Farmer Producer Organizations
KSRLPS	Karnataka State Rural Livelihood Promotion Society
SHG	Self-Help Groups
KSWC	Karnataka State Warehousing Corporation
DDU-GKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
WDD	Watershed Development Department
MT	Metric Tonnes
HA	Hectares
PM-FME	Pradhan Mantri Formalisation of Micro Food Processing Enterprises
UAS	University of Agricultural Sciences

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Disclaimers

Data Sources and Usage	• All data presented across this document are based on inputs shared by various departments of the Government of Karnataka (GoK), as of March 2026. • The figures are intended to provide directional insights and guidance for understanding Karnataka's horticulture ecosystem.
Loss percentages and reasons	• Post-harvest loss percentages and associated reasons are based on anecdotal estimations and reports shared by district officials (Government of Karnataka), as of March 2026, for select crops and select districts. • The data remains subject to validation and revision by Government of Karnataka, prior to any formal publication or use.
Cluster-level interpretation	In cluster-specific slides, infrastructure-related figures (units and capacities) represent aggregate horticulture coverage and are not limited to only fruits and vegetables.
Limitations	• Data availability, quality, and granularity may vary across crops and districts. • The analysis should be interpreted as indicative rather than definitive.

Thank you

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