



BUSINESS PLAN · INDIA

Horticulture Orchard - Fruits

An orchard that buys the loss onto its own books and counts it, because everyone else in the chain has sold before it appears

PLANTATION AND ESTATE AGRICULTURE

AISEVAK.IN · BY ABL DIGITAL TECHNOLOGIES

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This document is confidential and prepared for planning purposes. All financial figures are illustrative model assumptions for an Indian MSME context and must be validated against live quotes, local rates and professional advice before any investment or borrowing decision.

1. Executive Summary

This plan sets out a **Horticulture Orchard (Fruits)** in Maharashtra — **246 hectares: 142 ha mango (Alphonso and Kesar), 78 ha banana (G9) and 26 ha under new planting** — with a pack-house and grading line, ethylene ripening chambers, cold rooms, reefer dispatch and a pulp, puree and drying line, plus fruit bought from about 620 member growers. By Year 3 it handles **5,900 tonnes of fruit at ₹19.00 crore**.

This plan is the fifth in vertical 55 and **inherits the ten anchor rules (a)–(j)** set by the tea and coffee estate plan.

Item	Detail	Year 3
What is sold	Graded and chamber-ripened mango and banana, pulp and dried fruit from off-grade, and a ripening, pack-house and cold-chain service to third parties	₹19.00cr
Planted area / members	142 ha mango at 7.2 t/ha; 78 ha banana at 48 t/ha	246 ha; 620 members
Fruit handled	Own 4,766 t plus 1,140 t from members	5,900 tonnes
PAT / net margin	Horticulture is thin and capital-heavy; modelled at mid-cycle prices	₹0.97cr / 5.1%
ROCE on ₹11.50cr	Pulp line, chambers, pack-house, cold chain and planting	14.3%
Measured chain loss, field to dispatch	The number this plan exists to create and then reduce	19.4% → 8.6%

□ **EVERY PARTY IN THE INDIAN FRUIT CHAIN SELLS BEFORE THE LOSS APPEARS, SO THE LOSS IS REAL, ENORMOUS, AND BELONGS TO NOBODY.** The grower sells the standing crop to a contractor. The contractor clears it at the mandi within days. The commission agent turns it the same afternoon. The wholesaler moves it in forty-eight hours. **EVERY ONE OF THEM HAS EXITED BEFORE THE FRUIT SPOILS** — so the loss is absorbed as a slightly worse price at each handover, spread so thin that **NO PARTY CAN SEE ITS SIZE AND NO PARTY'S ACCOUNTS EVER RECORD IT.**

And there is a second loss that even the loss statistics miss. A mango picked before physiological maturity will still colour, soften and look perfect, because ripening can be triggered at almost any stage — **BUT SUGAR ACCUMULATION STOPS AT HARVEST.** That fruit is not wasted. It is bought, eaten and disappointing. **A ROTTED MANGO IS COUNTED. A TASTELESS ONE IS NOT.**

2. Business Description, Vision & Legal Structure

A private limited company holding the orchard on a long lease, operating the pack-house, ripening chambers, cold rooms and pulp line, and buying mango and banana from member growers across the surrounding talukas.

Element	Position
Legal form	Private limited company; orchard on 30-year registered lease; FSSAI licence for pack-house, ripening and the pulp line
Where the money is made	Fresh fruit at volume and moderate margin; pulp and the ripening service carry the margin and absorb what fresh cannot take

What is different	The fruit is weighed in and weighed out at every stage, and the loss at each stage is published
Vision	An orchard that knows what it lost, where it lost it, and what the eater actually received

Why this shape	Reasoning
Own fruit and member purchase together	Own blocks set the maturity standard; member volume fills a pack-house and a pulp line whose fixed cost punishes idleness
Mango and banana together	Mango is seasonal, weather-exposed and high-value; banana is year-round, predictable and low-value. Neither alone keeps a pack-house working
Own pack-house, chambers and pulp line	The loss can only be measured by whoever holds the fruit across the handover. A grower who sells at the tree has no way to measure anything downstream of it
No pre-harvest contracting	Selling the standing crop transfers the harvest date to the party with the least interest in getting it right, which is the mechanism this plan exists to break

3. Promoter & Ownership

Item	Position
Promoter	Second-generation orchardist with a post-harvest technology background and fifteen years on the holding; sets the dry-matter specification personally each season
Promoter equity	₹4.14cr of the ₹11.50cr project cost (36%), unsecured and not withdrawable during the loan term
Ownership	Promoter family 76%; member producer company 14%; ESOP and key staff 10%
Governance	The loss-by-stage report goes to the board every month and to members and buyers every season, and no manager's incentive is calculated on a volume figure that ignores it

The single most important governance fact is that the harvest date is not a commercial decision here. It is set by the maturity reading and the sales team cannot override it — because the entire mechanism this plan describes runs on a person under price pressure in April being allowed to say "pick it anyway."

4. Market Analysis — India

Segment	What drives it	Position taken
Mango, graded and chamber-ripened	Season arrival dates, cultivar reputation, modern-trade and export specification; prices fall steeply as the season floods	687 t at ₹83/kg
Banana (G9), graded and ripened	Year-round demand, bunch grade, ripening uniformity; the volume crop that keeps a pack-house busy	2,850 t at ₹14/kg
Member fruit, graded and ripened	620 holdings with no pack-house, no chamber and no cold room	1,140 t at ₹30/kg blended
Pulp, puree and dried fruit	Beverage, dairy and food service; absorbs off-grade and season peaks that fresh cannot take	585 t of output at ₹52/kg

Ripening, pack-house and cold-chain service	Third-party fruit needing chambers and cold rooms in a district that has almost none	₹1.71cr at 54% gross margin
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Why the loss is structural rather than careless

Party	Holds the fruit for	Loss on their books
Grower selling a standing crop	Until the contract is signed	None
Pre-harvest contractor	Days	Almost none
Commission agent	Hours	None
Wholesaler	Under 48 hours	A little
Retailer and eater	Until it goes	All of it, unrecorded

Demand is not the constraint. **India grows more mango and more banana than any other country and sells essentially all of it. The constraint is that a very large fraction of what is grown never reaches anybody in a state worth eating, and the reason is not that the chain is incompetent — IT IS THAT THE CHAIN IS SHORT-HELD AT EVERY LINK, SO THE PARTY WHO COULD PREVENT THE LOSS IS NEVER THE PARTY WHO BEARS IT.**

One number frames the whole opportunity. India is the largest producer of both mango and banana on earth and exports a very small fraction of either, not because the fruit is unwanted abroad but because it does not arrive in a condition that survives the journey. The constraint on Indian fruit has never been horticultural — the trees yield, the cultivars are excellent and the growers are skilled — IT HAS ALWAYS BEEN THE FORTY-EIGHT HOURS AFTER THE FRUIT LEAVES THE TREE, WHICH IS EXACTLY THE PERIOD NOBODY IN THE CHAIN OWNS.

5. Competition & Position

Competitor type	What they do well	Where the gap is
Pre-harvest contractors	Liquidity, speed, risk transfer that growers genuinely value	Paid on weight cleared, so the harvest date and the number of picking passes are set against quality
Mandi commission agents	Price discovery, reach, same-day settlement	Hold fruit for hours and are structurally indifferent to what happens after
Modern-trade suppliers	Real specifications, cold chain, consistent grading	Specify appearance and size because that is what a shelf shows; almost none specify dry matter
Pulp processors	Absorb volume, stabilise season peaks, genuine scale	Buy on weight and Brix at the gate, so they take immature fruit at a discount rather than refusing it
This orchard	Own fruit, own pack-house, own chambers, own pulp line and own cold chain	Positioned on the two numbers nobody in the chain currently produces: loss by stage, and dry matter at harvest

The honest competitive position is that this orchard is slower and dearer at the point of sale. It arrives twelve days later than the early market, refuses fruit that would have sold, and carries a cold chain its competitors do not. What it gets in return is a buyer who stops discovering the condition of the fruit after he has paid for it,

which is worth something to a modern-trade chain and nothing at all in a mandi.

6. The Loss Is Real and Belongs to Nobody

This is the finding, and it concerns a cost that is enormous, undisputed, and absent from every account it passes through.

Where the loss occurs	Who could prevent it	Who pays for it
Harvest bruising and strip-picking	The contractor	Not the contractor
Field heat, unshaded holding	The contractor	Not the contractor
Transit without cooling	The transporter	Not the transporter
Mandi handling and re-handling	The agent	Not the agent
Everywhere	Somebody upstream	Whoever holds it last

EVERY PARTY IN THIS CHAIN SELLS BEFORE THE LOSS MATERIALISES IN THEIR HANDS. The grower sells the standing crop to a pre-harvest contractor and is paid before a single fruit is picked. The contractor clears the lot at the mandi within days of harvest. The commission agent turns it the same afternoon. The wholesaler moves it inside forty-eight hours. By the time the fruit is actually unfit, it has passed through four sets of hands and is in the fifth. **THE LOSS IS PERFECTLY REAL AND PERFECTLY UNOWNED.**

It is not that anybody is hiding it. **IT IS THAT THE LOSS IS ABSORBED AS A SLIGHTLY WORSE PRICE AT EACH HANDOVER, SPREAD SO THIN ACROSS SO MANY TRANSACTIONS THAT NO PARTY CAN SEE ITS SIZE.** A contractor who bruises fruit gets a marginally lower average at the mandi and attributes it to the day's arrivals. An agent who lets a lot sit in the sun sees a slightly softer market. **NONE OF THEM IS WRONG ABOUT THEIR OWN NUMBERS, AND ALL OF THEM ARE BLIND TO THE AGGREGATE.** And because the party who could prevent each loss has already been paid, **THERE IS NO INVESTMENT ANYWHERE IN THE CHAIN THAT WOULD REPAY THE PERSON MAKING IT.** A crate costs money today and saves fruit that belongs to somebody else next week.

So buy the loss onto your own books and count it. THE FRUIT IS WEIGHED IN AND WEIGHED OUT AT EVERY STAGE — field, collection, pack-house, chamber, cold room, dispatch — AND THE LOSS AT EACH STAGE IS PUBLISHED, to members and to buyers. MEASURED CHAIN LOSS FELL 19.4% → 8.6% across three years, which on 5,900 tonnes is 637 tonnes of fruit that no longer disappears, worth about ₹2.05 crore at average realisation. That saving is already inside the ₹19.00 crore of revenue rather than additional to it, and it is why this particular commitment very nearly pays for itself: ₹0.50 crore of measurement against ₹2.05 crore of fruit. **GENERAL RULE: WHERE EVERY PARTY SELLS BEFORE THE LOSS APPEARS, THE LOSS IS REAL AND BELONGS TO NOBODY — SO BUY IT ONTO YOUR OWN BOOKS AND COUNT IT, STAGE BY STAGE.**

It is worth being clear that the pre-harvest contractor is not the villain of this story either. He performs a service growers genuinely want: he pays cash before the crop exists, absorbs the weather risk of the remaining weeks, and removes the grower's need to organise labour, transport and a mandi relationship he has no capacity to manage. For a smallholder with no working capital that is a real and valuable product, and any plan that treats it as exploitation has misread the market. **THE PROBLEM IS NOT THAT HE EXISTS. IT IS THAT THE CONTRACT TRANSFERS THE HARVEST DATE ALONG WITH THE RISK — and the harvest date is the single decision that determines whether the fruit is worth eating, handed to the one party whose payment is complete before anybody tastes it.**

7. A Rotted Mango Is Counted and a Tasteless One Is Not

The second thread is a loss that even the loss statistics do not reach.

Attribute	Fixed when?	Measured by the trade?
Colour	After harvest, by ethylene	Yes
Softening	After harvest, by ethylene	Yes
Size and appearance	On the tree	Yes
Sugar and flavour	On the tree, and only there	No

A mango picked before physiological maturity will still colour, still soften and still look exactly like a good one, because ripening can be triggered by ethylene at almost any stage after a certain point. **BUT SUGAR ACCUMULATION STOPS AT HARVEST.** The starch that converts to sugar during ripening is a reserve laid down on the tree; if the reserve was not laid down, no ripening process creates it, and no amount of time in a chamber will. **SO THE FRUIT LOOKS IDENTICAL AND TASTES OF NOTHING, AND IT IS NOT WASTED — IT IS BOUGHT, EATEN AND DISAPPOINTING. A ROTTED MANGO IS COUNTED IN EVERY POST-HARVEST LOSS STATISTIC IN INDIA. A TASTELESS ONE APPEARS IN NONE OF THEM.**

What makes this fixable rather than tragic is that maturity is measurable and cheap to measure. **DRY MATTER PERCENTAGE** — a slice, an oven and a scale — predicts eating quality better than anything else available, and specific gravity, days after flowering and shoulder development all corroborate it. The instruments cost a few thousand rupees and the test takes hours, not days. **THE TRADE DOES NOT MEASURE IT BECAUSE THE TRADE IS PAID ON WHAT A BUYER CAN SEE AT THE COUNTER, AND AT THE COUNTER AN IMMATURE RIPENED MANGO IS INDISTINGUISHABLE FROM A GOOD ONE.** The attribute that decides whether the eater is satisfied is fixed in the field and verified nowhere.

So no block is harvested below specification. 96 blocks were held back in Year 3, and the cost is precise and painful: ₹0.62 crore of gross profit given up because 412 tonnes of mango arrived at ₹83 per kilogram instead of the ₹98 available twelve days earlier. **Unlike the loss measurement, THIS COMMITMENT DOES NOT PAY FOR ITSELF AND IS NOT CLAIMED TO — it is a straight transfer from this orchard's margin to the person eating the fruit.**

8. Operations Plan (test, pick, cool, ripen)

- **Test.** Dry matter, specific gravity and days after flowering read by block from three weeks before the expected window; a block below the season's specification is not scheduled, and the sales team cannot override the reading.
- **Pick.** Selective picking in four to five passes rather than one strip-harvest; clipped with a stub, de-sapped, field-crated rather than heaped, and out of the sun within the hour.
- **Cool.** Collection to pack-house within four hours; field heat removed before grading; cold rooms hold graded fruit ahead of the chamber schedule.
- **Ripen.** Ethylene chambers at controlled temperature and concentration; **no calcium carbide anywhere on site, which is both a legal requirement and an operating rule with no exceptions.**
- **Weigh.** In and out at every stage, so the loss is attributed to a stage rather than to the season.

Stage	What is recorded	Who sees it
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Pre-harvest	Dry matter, specific gravity, days after flowering, by block	Harvest schedule, binding
Field to collection	Weight out, weight in, elapsed time, field temperature	Loss report
Pack-house	Weight in, graded out, rejects by cause	Loss report
Chamber and cold room	Weight in, weight out, shrinkage, chamber cycle	Published by stage
Member purchase	Weight, grade, and no post-facto arrival deduction	The member, at delivery

The operational hinge is a 68-tonne block of Kesar reading 12.8% dry matter against a 15.0% specification on the fourteenth of April, with the early market at ₹98 a kilogram and falling roughly ₹2 a day, and a modern-trade buyer holding an open order. The trade answer is to pick it: it will colour, it will soften, it will grade, it will pass every inspection anyone performs, and nobody will ever be able to prove it should not have been picked. Ours: the block waits twelve days, comes in at 15.2%, and sells at ₹83 — ₹10.2 lakh less on one block. Across the season that discipline costs ₹0.62 crore, and the only party who can tell the difference is the person eating it, who will never know either way.

9. Food Safety, Horticulture Mission & Labour Compliance (India)

Area	Requirement
Food safety	FSSAI licence for pack-house, ripening and the pulp line; hygiene, traceability and recall procedures; potable-water and pest-control requirements
Ripening	Food Safety and Standards regulations prohibit calcium carbide for artificial ripening; ethylene ripening is permitted within prescribed concentration limits and is what this plan uses exclusively
Residue	FSSAI Contaminants, Toxins and Residues Regulations; importing-country MRLs for any export line; pre-harvest intervals under the Insecticides Act
Scheme compliance	MIDH and cold-chain scheme conditions for pack-house, chambers, cold rooms and reefers; APEDA registration where fruit is exported
Labour	Plantations Labour Act where applicable and state agricultural labour rules; EPF, ESI, Minimum Wages; harvest crews engaged directly rather than through contractors
Tax	Growing fruit is agricultural income exempt under section 10(1); the pulp line, ripening service and member trading are business income; GST on processed products
Other	Legal Metrology for weighment at every stage; Water and Air consents for the pulp line; packaging and labelling rules for processed output

What the law reaches	What it does not
Which ripening agent may be used	Whether the fruit was mature enough to ripen usefully
Residue limits on the fruit sold	Loss anywhere in the chain, at any stage
Hygiene inside the pack-house	What happened to the fruit in the eight hours before it arrived
Weights and measures at the point of sale	Any obligation to record what was weighed in against what was weighed out

The carbide prohibition is the instructive one, because it is a rule about the ripening agent and there is no rule at all about the ripening candidate. A trader who ripens immature fruit in a compliant ethylene chamber has broken nothing, sold a fruit that will disappoint, and will pass every inspection performed on the premises. THE LAW HAS REACHED THE METHOD AND STOPPED SHORT OF THE MATERIAL.

10. Organisation & Manpower Plan

Function	Yr 1	Yr 3	Note
Orchard director	1	1	Sets the dry-matter specification
Field workers	218	264	Derived, not assumed: 142 ha × 0.85 + 78 ha × 1.60 + 26 ha × 0.70
Harvest crews	42	58	Selective picking, four to five passes, engaged directly
Pack-house, grading and ripening	54	76	Two shifts in the mango window
Pulp and drying line	28	42	585 t of output
Loss measurement, maturity testing, member liaison	13	21	Weighed in and out at every stage
Cold chain and dispatch	17	24	Reefers and cold rooms
Welfare	5	7	—
Sales, admin and accounts	13	16	—
Total	391	509	5,900 t handled; 620 members

The 21 people in loss measurement, maturity testing and member liaison are the commitment made flesh. Their salaries are ₹0.58 crore — ₹2.76 lakh average CTC across 21 — and ₹0.38 crore covers dry-matter ovens, refractometers, platform scales at every stage and the publishing system. Across the 5,900 tonnes handled, the whole apparatus of measurement, maturity discipline and cold chain costs ₹2,915 per tonne, or 9.1% of revenue.

Where the loss was, once it could be seen	Yr 1	Yr 3	What changed
Harvest and field holding	6.8%	2.4%	Clipping with a stub, de-sapping, field crates instead of heaps, out of the sun within the hour
Field to pack-house	4.1%	1.3%	Four-hour collection window and pre-cooling before grading
Pack-house and grading	3.2%	1.9%	Less re-handling; rejects diverted to pulp rather than re-sorted twice
Chamber and cold room	3.6%	1.8%	Controlled concentration and temperature instead of a chamber run by eye
Dispatch	1.7%	1.2%	Reefer loading discipline
Total, field to dispatch	19.4%	8.6%	None of it exotic; all of it invisible until it was weighed

Read that table and the striking thing is how ordinary every remedy is. No new technology appears in the right-hand column — crates, shade, a four-hour window, a thermometer in a chamber. The 10.8 points were not waiting on an invention. THEY WERE WAITING ON SOMEBODY WEIGHING THE FRUIT AT BOTH ENDS OF EACH STEP, WHICH COSTS ₹0.50 CRORE AND IS THE ONLY THING IN THIS PLAN THAT NOBODY HAD EVER DONE.

11. Implementation Timeline & Milestones

Phase	Months	Milestone
Registrations and finance	0-4	FSSAI, MIDH and cold-chain scheme sanction, term loan, lease registered
Weighing and maturity testing	2-7	Scales at every stage and the dry-matter laboratory running before the first mango window
Pack-house and cold rooms	4-13	Grading line, pre-cooling and cold rooms commissioned
Ripening chambers	8-16	Ethylene chambers commissioned; carbide removed from every site under our control
Pulp and drying line	10-20	Absorbs off-grade and season peak
Member enrolment	6-26	310 → 620 members; loss and maturity reports issued free

Milestone that must not slip	Why
Scales before the first mango window	A season measured at one end and not the other produces a number nobody can attribute, and the whole programme rests on attribution by stage
Dry-matter laboratory before harvest scheduling	A specification announced after the first block is picked is a specification nobody believes
Cold rooms before the chambers	Chamber capacity with no cold holding forces fruit through on the ripening schedule instead of the market's
Pulp line before the peak, not after	Off-grade with nowhere to go in the peak week is off-grade sold as grade, which is the practice being abandoned

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions in Indian rupees, not forecasts or guarantees. Drivers are shown so every number can be changed.

12.1 Revenue build (₹ lakh)

Stream	Yr 1	Yr 2	Yr 3	Share	GM
Mango, graded and chamber-ripened	388	486	570	30.0%	40.0%
Banana (G9), graded and ripened	268	336	399	21.0%	32.0%
Member fruit, graded and ripened	176	262	342	18.0%	16.0%
Pulp, puree and dried fruit from off-grade	168	240	304	16.0%	44.0%
Ripening, pack-house and cold-chain service	106	122	171	9.0%	54.0%

Nursery, agronomy and maturity-testing service	74	94	114	6.0%	58.0%
Total	1,180	1,540	1,900	100%	37.0%

The pulp line at 16% of revenue is not a by-product business, it is the pressure valve that makes the maturity rule enforceable. An orchard with no outlet for off-grade fruit in the peak week will sell off-grade fruit as grade, every time, because the alternative is throwing it away. ₹3.22 crore of the project cost buys the ability to say no.

12.2 What is committed, and what it is measured on

Commitment	Yr 1	Yr 3
Handovers with weight in and weight out recorded / measured chain loss, field to dispatch	61% / 19.4%	100% / 8.6%
Blocks harvested only at or above the dry-matter specification / blocks held back	44% / 31	100% / 96
Fruit ripened in ethylene chambers / calcium carbide found on site	68% / nil	100% / nil
Gross profit forgone by harvesting on maturity rather than into the early window	₹0.21cr	₹0.62cr
Member fruit bought without a post-facto arrival deduction	52%	100%
Loss by stage published to members and buyers	no	yes

Rows one and two are the two findings and they behave completely differently. Row one very nearly pays for itself — 637 tonnes of fruit saved, worth ₹2.05 crore, against ₹0.50 crore of measurement. Row two does not and never will: ₹0.62 crore transferred from this orchard to the eater, with no mechanism by which the eater can know it happened or reward it. A plan that pretended both were investments would be misrepresenting the second one.

12.3 Profit & loss (₹ lakh)

Line	Yr 1	Yr 2	Yr 3
Revenue	1,180	1,540	1,900
Cost of goods (inputs, harvest labour, member purchase, processing)	(737)	(970)	(1,197)
Gross profit	443	570	703
Loss measurement: weighing at every stage and publishing it	(30)	(40)	(50)
Maturity testing and harvest scheduling to specification	(26)	(36)	(46)
Ethylene ripening and cold chain, field to dispatch	(44)	(60)	(76)
Selling and distribution	(48)	(62)	(78)
Orchard, pack-house and welfare overhead	(88)	(108)	(128)
Administration	(34)	(40)	(46)
EBITDA	173	224	279
Depreciation and amortisation	(86)	(100)	(114)

Finance cost	(56)	(62)	(68)
Other income (nursery, crate hire, misc)	10	14	18
PBT	41	76	115
Tax (agricultural income exempt, ~16% effective)	(7)	(12)	(18)
PAT	34	64	97
Net margin	2.9%	4.2%	5.1%
ROCE on ₹11.50cr	7.6%	10.8%	14.3%
<i>Memo: fruit no longer lost, at average realisation</i>	—	118	205

12.4 Project cost & funding (₹ lakh)

Use of funds	₹L	%	Source of funds	₹L
Pulp, puree and drying line	322	28%	Promoter equity	414
Ripening chambers and cold rooms	242	21%	Term loan (NABARD-refinanced)	460
Pack-house, grading and sorting line	184	16%	MIDH / cold-chain subsidy	161
New planting on 26 ha and orchard rejuvenation	138	12%	Working capital limit	115
Reefer and field-collection vehicles	103	9%	—	—
Worker housing and welfare	92	8%	—	—
Working capital margin and pre-operative	69	6%	—	—
Total	1,150	100%	Total	1,150

12.5 Sensitivities (₹ crore PAT, Year 3)

Scenario	What changes	PAT
Base case as planned	As above	₹0.97cr
Trade-standard practice instead	Harvest into the early window (+₹0.62cr), sell 180 t of off-grade as grade instead of diverting it to pulp (+₹1.13cr net), strip-harvest in fewer passes (+₹0.28cr), take post-facto arrival deductions from members (+₹0.19cr), close the weighing, maturity and cold-chain programmes (+₹1.72cr): revenue ₹20.75cr at 44.6% gross margin	₹4.08cr
Unseasonal rain at flowering halving the mango crop	₹3.20cr including unabsorbed pack-house and chamber cost. This is the risk that actually ends orchards in Maharashtra and it is not remote	(₹1.72cr)
Mango price –25% in a glut season	₹1.43cr off gross profit	(₹0.24cr)
Pack-house and chamber utilisation 30% below plan	₹0.96cr of fixed cost unabsorbed	₹0.16cr
Wage and transport +12%	₹0.68cr	₹0.39cr

THE SECOND ROW IS THE WIDEST GAP IN THIS ENTIRE VERTICAL AND IT SHOULD BE. Trade-standard practice earns ₹4.08 crore against ₹0.97 crore — more than four times as much — and the largest single component is not the loss programme at all. **It is ₹1.13 crore from selling 180 tonnes of off-grade fruit as grade, which is legal, undetectable at the counter, and the ordinary practice of the trade. Anyone assessing this plan should sit with that number, because it is the honest measure of what the discipline costs and therefore of how strong the incentive to abandon it will be in a bad year.**

12.6 Volumes and unit economics (Year 3)

Physical driver	Volume	Realisation	Revenue
Mango sold fresh, graded and ripened	687 t	₹83/kg	₹570L
Banana sold fresh, graded and ripened	2,850 t	₹14/kg	₹399L
Member fruit, graded and ripened	1,140 t	₹30/kg	₹342L
Pulp, puree and dried output	585 t	₹52/kg	₹304L
Ripening, pack-house and nursery services	620 members	—	₹285L
Total fruit handled	5,900 t	₹32,203/t	₹1,900L

Derived figure	Working	Result
Own mango	142 ha at 7.2 t/ha, of which 687 t fresh and 335 t to pulp	1,022 t
Own banana	78 ha at 48 t/ha, of which 2,850 t fresh and 894 t to pulp	3,744 t
Off-grade to the pulp line	1,480 t of input yielding 585 t of output	₹20.5 per kg of input
Cost of the commitment per tonne handled	₹1.72cr over 5,900 t	₹2,915/t, 9.1% of revenue
Fruit no longer lost	10.8 points of 5,900 t, at ₹32,203/t	637 t, ₹2.05cr
Field workers	$142 \times 0.85 + 78 \times 1.60 + 26 \times 0.70$	264

The gap between ₹83 a kilogram fresh and ₹20.5 a kilogram as pulp input is what every quality decision in this business is actually worth. It is why an orchard without a pulp line cannot enforce a maturity standard, and it is why the trade sells its off-grade fresh: the alternative costs three-quarters of the value.

Where the ₹2.34 crore of commitments goes	₹cr	Does it pay for itself?
Ethylene ripening and cold chain, field to dispatch	0.76	Yes. Most of the 10.8 points of loss reduction sit here
Maturity discipline: forgone margin on the early window	0.62	No, and it never will
Loss measurement: weighing at every stage, published	0.50	Yes, several times over — ₹2.05cr of fruit
Maturity testing and harvest scheduling	0.46	Only insofar as it protects the buyer relationship

Three of those four lines are investments and one is not. ₹1.26 crore of measurement and cold chain returns ₹2.05 crore of fruit that used to disappear; ₹1.08 crore of maturity discipline returns a better mango to somebody who cannot tell and did not ask. Splitting them out this way is the only honest way to present the file, because a lender asked to fund both should know which half is a return on capital and which half is a decision about what kind of business this is.

13. Funding Requirement & Bankability

Item	Position
Requirement	₹11.50cr: ₹4.14cr promoter equity, ₹4.60cr term loan, ₹1.61cr MIDH/cold-chain subsidy, ₹1.15cr working capital limit
Security	Leasehold improvements, pack-house, chambers, cold rooms and pulp plant, hypothecation of stock and receivables; personal guarantee of the promoter
Debt service	Year 3 EBITDA ₹2.79cr against interest ₹0.68cr and scheduled repayment; DSCR above 1.7x from Year 3
The weather question	A single bad flowering takes this book to a ₹1.72cr loss. Banana, the pulp line and the service revenue exist precisely because mango alone cannot carry a lender through that year, and a file that shows only a good season is not showing the business
Subsidy risk	₹1.61cr reimbursed against completed and inspected assets; a 12-month lag is assumed on the working capital limit
What a lender should test	Not the yield — the loss-by-stage report. An orchard whose measured loss is falling is one that has found where the fruit goes; an orchard with no such report has not looked

Year	EBITDA	Interest	Repayment	DSCR
Year 1	₹1.73cr	₹0.56cr	Moratorium	—
Year 2	₹2.24cr	₹0.62cr	₹0.58cr	1.87x
Year 3	₹2.79cr	₹0.68cr	₹0.92cr	1.74x

14. Risk Analysis & Mitigation

Risk	Impact	Mitigation
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The loss is real and belongs to nobody	Every party sells before the loss materialises: the grower sells the standing crop, the contractor clears at the mandi in days, the agent turns it the same afternoon, the wholesaler moves it in forty-eight hours. By the time the fruit is unfit it has passed four sets of hands and is in the fifth. Nobody hides it — the loss is absorbed as a slightly worse price at each handover, spread so thin across so many transactions that no party can see its size, and each of them is right about their own numbers and blind to the aggregate. And because whoever could prevent a loss has already been paid, NO INVESTMENT ANYWHERE IN THE CHAIN REPAYS THE PERSON MAKING IT	BUY THE LOSS ONTO YOUR OWN BOOKS AND COUNT IT. Weighed in and weighed out at every stage — field, collection, pack-house, chamber, cold room, dispatch — with the loss attributed to a STAGE rather than to the season, and published to members and buyers. MEASURED CHAIN LOSS 19.4% → 8.6%, which on 5,900 t is 637 TONNES OF FRUIT THAT NO LONGER DISAPPEARS, worth ₹2.05cr at average realisation and already inside the ₹19.00cr of revenue. This commitment very nearly pays for itself: ₹0.50cr of measurement against ₹2.05cr of fruit. GENERAL RULE: WHERE EVERY PARTY SELLS BEFORE THE LOSS APPEARS, THE LOSS IS REAL AND BELONGS TO NOBODY — SO BUY IT ONTO YOUR OWN BOOKS AND COUNT IT, STAGE BY STAGE
A rotted mango is counted and a tasteless one is not	A mango picked before physiological maturity still colours, still softens and still looks perfect, because ripening triggers on ethylene — but sugar accumulation stops at harvest, and the starch reserve that becomes sugar was either laid down on the tree or it was not. So the fruit is not wasted; it is bought, eaten and disappointing, and it appears in no loss statistic anywhere. The trade measures colour and firmness because that is what a buyer sees at the counter, and the attribute that decides satisfaction is fixed in the field and verified nowhere	NO BLOCK HARVESTED BELOW SPECIFICATION. Dry matter, specific gravity and days after flowering read by block from three weeks out; the harvest schedule follows the reading and THE SALES TEAM CANNOT OVERRIDE IT. 96 blocks held back in Year 3 at a cost of ₹0.62cr — 412 t arriving at ₹83/kg instead of the ₹98 available twelve days earlier. UNLIKE THE LOSS PROGRAMME THIS DOES NOT PAY FOR ITSELF AND IS NOT CLAIMED TO: it is a straight transfer from this orchard's margin to the person eating the fruit
Weather at flowering	The risk that actually ends orchards in Maharashtra. Unseasonal rain or a warm spell at flowering can halve an Alphonso crop; with unabsorbed pack-house and chamber cost that is ₹3.20cr and a ₹1.72cr loss. It is not remote and it is not insurable on terms worth taking	Banana at 21% of revenue is year-round and weather-independent by comparison; the pulp line and the third-party ripening service earn on other people's fruit; two mango cultivars with different flowering windows; working capital sized to survive one failed season rather than to optimise a good one
Price volatility and glut	Mango prices fall steeply as the season floods and a 25% fall is ₹1.43cr off gross profit, taking PAT to a small loss. The pressure to harvest early is at its most intense exactly when the maturity rule matters most	The pulp line converts glut volume into a product with a different price cycle; modern-trade supply on specification rather than mandi consignment; the maturity rule is a board rule precisely so it survives the week it is expensive
Utilisation of pack-house and chambers	₹7.48cr of pack-house, chamber, cold room and pulp assets punish idleness; 30% below plan is ₹0.96cr	Third-party ripening and cold-chain service at 9% of revenue is designed to fill the gaps; member purchase sized to keep the line running outside the own-fruit window
Cold chain reliability	A chamber cycle or cold room lost to a power failure is fruit lost at the most expensive point in the chain	Backup power sized for chambers and cold rooms; the loss report attributes any such event to a stage rather than absorbing it
Member concentration	620 members can sell to any contractor for cash at the tree	Grading, ripening, cold rooms and a price with no post-facto deduction are what no contractor offers

15. SWOT Analysis

Strengths	Weaknesses
Own fruit, pack-house, chambers, cold chain and pulp line in one entity, which is the only configuration in which loss can be attributed to a stage at all; two crops with opposite seasonality and risk profiles; a pulp outlet that makes the maturity rule enforceable rather than aspirational; a promoter with post-harvest technology behind him; 620 members who bring volume and a channel for the practice	Thin margins on a capital-heavy base — 5.1% net and 14.3% ROCE; a single bad flowering produces a ₹1.72cr loss; the maturity discipline costs ₹0.62cr a year and returns nothing measurable; the trade-standard version of this business earns more than four times as much; ₹1.61cr of subsidy carried as a receivable
Opportunities	Threats
Modern trade and export buyers will specify dry matter once somebody offers it; the district has almost no ripening or cold-room capacity, so the service line has a real market; loss-by-stage data is the kind of disclosure a serious lender will eventually ask for; the pulp line can take third-party glut volume	Weather at flowering, which no amount of discipline addresses; mandi price collapse in a glut year; a competitor selling immature fruit that looks identical and costs less; power reliability; and the plain fact that nobody at the counter can tell the difference this plan is paying for

The honest reading is that one of these two commitments is an investment and the other is not. Measuring the loss pays. Waiting for maturity does not, and will not, and the only reason to do it is that the alternative is knowingly selling somebody a fruit that will disappoint him. A plan that dressed the second one up as a marketing advantage would be doing exactly what the trade does at the counter.

There is one way the second commitment might eventually pay, and this plan does not count on it. If a modern-trade buyer ever specifies dry matter the way it already specifies size and colour, an orchard that has been measuring it for three seasons has a supply position nobody can assemble quickly. That is a real possibility and it is not in any number here — because a business case resting on a buyer changing his specification is a business case resting on somebody else's decision, and the discipline has to be worth doing on the day the buyer never asks.

16. Recommended AiSevak Tools for This Business

- **Business plan and project report generator** — for the MIDH and cold-chain scheme file and the term loan appraisal.
- **Compliance calendar** — FSSAI renewal, scheme inspections, water and air consents, EPF, ESI and labour registers.
- **Cost and pricing calculator** — cost per tonne by stage, fresh versus pulp netbacks, and the loss attributed to each handover.
- **GST and invoicing helper** — agricultural versus processed treatment, member purchase vouchers, reverse charge, processed-product GST.
- **Labour and payroll toolkit** — harvest crew muster rolls, direct engagement records, welfare registers.
- **Loan and subsidy application helper** — milestone-based MIDH and cold-chain claims and the working capital assessment that carries a 12-month lag.
- **Contract and terms drafting helper** — the member supply agreement with no post-facto deduction, and the published maturity specification.

Every tool above is **free to use on AiSevak and needs no signup to explore**. The toolkit link at the end of this plan opens the whole plantation set.

17. Key Assumptions & Notes

- **All financials are illustrative model assumptions, not forecasts, projections or guarantees.** Revenue, planted area, yields, mango and banana prices, loss rates and the dry-matter specification are editable inputs; outcomes depend on weather at flowering, market arrivals, utilisation and labour availability. Figures are in Indian rupees. **This plan is the fifth in vertical 55 and inherits its ten anchor rules (a)-(j).**
- **The central finding is that every party in the Indian fruit chain sells before the loss appears, so the loss is real, enormous and belongs to nobody.** The grower sells the standing crop, the contractor clears at the mandi in days, the agent turns it the same afternoon, the wholesaler moves it in forty-eight hours. **By the time the fruit is unfit it has passed four sets of hands and is in the fifth.**
- **Nobody is hiding it.** The loss is absorbed as a slightly worse price at each handover, spread so thin that no party can see its size — **each of them is right about their own numbers and blind to the aggregate — and because whoever could prevent a loss has already been paid, no investment anywhere in the chain repays the person making it. GENERAL RULE: WHERE EVERY PARTY SELLS BEFORE THE LOSS APPEARS, THE LOSS IS REAL AND BELONGS TO NOBODY — SO BUY IT ONTO YOUR OWN BOOKS AND COUNT IT, STAGE BY STAGE.**
- **The second thread is that a rotted mango is counted and a tasteless one is not.** Fruit picked before physiological maturity still colours and softens on ethylene, **but sugar accumulation stops at harvest**, so the fruit looks identical and tastes of nothing. **It is not wasted — it is bought, eaten and disappointing, and it appears in no loss statistic anywhere.** Dry matter predicts eating quality and costs a slice, an oven and a scale; the trade does not measure it because the trade is paid on what a buyer can see at the counter.
- **The two commitments behave completely differently and the plan says so.** Loss measurement nearly pays for itself — 637 tonnes saved, worth ₹2.05cr, against ₹0.50cr of measurement, and the saving is already inside the ₹19.00cr of revenue rather than additional to it. **The maturity discipline does not pay and is not claimed to: ₹0.62cr transferred from this orchard to the eater, with no mechanism by which the eater can know or reward it.**
- **Volumes and unit economics.** 5,900 t handled: 687 t of mango fresh at ₹83/kg from 142 ha at 7.2 t/ha, 2,850 t of banana at ₹14/kg from 78 ha at 48 t/ha, 1,140 t of member fruit at ₹30/kg, and 585 t of pulp and dried output at ₹52/kg from 1,480 t of off-grade input. The commitment costs ₹2,915 per tonne, or 9.1% of revenue. Field headcount is derived, not assumed: $142 \times 0.85 + 78 \times 1.60 + 26 \times 0.70 = 264$.
- **The honest version is much the less profitable one, and here the gap is the widest in this vertical.** Trade-standard practice earns ₹4.08cr against ₹0.97cr — over four times — and the largest single component is **₹1.13cr from selling 180 tonnes of off-grade fruit as grade, which is legal, undetectable at the counter and the ordinary practice of the trade. That number is the honest measure of how strong the incentive to abandon this discipline will be in a bad year.**
- **Compliance and professional advice.** FSSAI licensing for pack-house, ripening and the pulp line; **the Food Safety and Standards regulations prohibiting calcium carbide for artificial ripening, ethylene being permitted within prescribed limits**; the Contaminants, Toxins and Residues Regulations and pre-harvest intervals under the Insecticides Act; MIDH and cold-chain scheme conditions and APEDA registration for any export line; state agricultural labour rules with harvest crews engaged directly; section 10(1) treatment of agricultural income and GST on processed output; Legal Metrology for weightment at every stage; Water and Air consents for the pulp line. **The carbide rule is instructive: the law reaches the ripening agent and stops short of the ripening candidate, so a trader who ripens immature fruit in a compliant chamber has broken nothing and will pass every inspection performed**

on his premises. Professional advice should be taken on lease and scheme conditions, the agricultural-income split, food-safety and recall procedures, and the contractual standing of a published maturity specification.

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Every tool referenced in this plan is available on aisevak.in. Open the [Plantation and Estate Agriculture toolkit](#) to browse and use them all at <https://aisevak.in/verticals/plantation> — or go straight to any specific tool at <https://aisevak.in/service/<tool-name>>. No signup needed to explore; each tool guides you step by step.

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