



BUSINESS PLAN · INDIA

Bio-Fertiliser and Bio-Pesticide Brand

Living inputs sold with proof they are still alive

AGRI-INPUTS

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 **Bio-Inputs Brand** in India — a fermentation-based manufacturer of liquid and carrier bio-fertilisers (Rhizobium, Azospirillum, phosphate and potash solubilisers), bio-pesticides (*Trichoderma*, *Beauveria*, *Metarhizium*, Bt), mycorrhiza, bio-stimulants and seaweed extracts, sold under its own label and manufactured under contract for others.

The vertical's conventions are set in the fertiliser-manufacturing anchor and carried through crop protection, seed and retail: **where the effect is separated from the cause by a season, publish a measurement at the time of sale; retain a sample so the buyer can test the seller; report the advice that reduced the sale; and verify a potency guarantee at expiry rather than at packing. What is specific to biologicals is that this category has already spent its credibility — a decade of dead product sold as living has taught Indian farmers that none of it works.**

□ **A DEAD BIO-PRODUCT AND A WORKING ONE ARE INDISTINGUISHABLE IN THE BOTTLE, ON THE SHELF AND IN THE FIELD. A bio-fertiliser whose bacterial count has collapsed to zero looks, pours and smells exactly like one at specification; and because a genuine biological works slowly, partially and only in some conditions, a farmer who applies a dead product and sees nothing has no way to distinguish "this was inert" from "this is how they behave". That single fact has done the category's damage: it has been possible to sell nothing for years without being caught, so a great deal of nothing has been sold, and the farmer's conclusion — that biologicals do not work — is a rational inference from his own experience. An honest manufacturer therefore CANNOT DISTINGUISH HIMSELF BY OUTCOME, because the outcome is exactly what has been rendered uninformative. He can only distinguish himself by MEASUREMENT: CFU AND SPORE COUNTS STATED AT MANUFACTURE AND GUARANTEED AT EXPIRY from real storage trials, RETAINED SAMPLES VIABILITY-TESTED AT EXPIRY WITH FAILURES PUBLISHED, STRAIN IDENTITY NAMED TO GENUS, SPECIES AND STRAIN CODE, and A SHORTER HONEST SHELF LIFE PRINTED WHERE THE ORGANISM CANNOT SURVIVE LONGER. WHERE A CATEGORY'S REPUTATION HAS ALREADY COLLAPSED, THE ONLY WAY IN IS A MEASUREMENT THE SCEPTIC CAN CHECK — not a claim, because claims are what destroyed it.**

□ **AND THE HONEST EFFICACY POSITION IS MODEST. Biologicals work in some soils, on some crops, in some seasons, and the published evidence is genuinely mixed — a *Trichoderma* that suppresses soil-borne disease in a moist Kerala plantation may do very little in an alkaline, low-organic-carbon black soil in a dry year. So this brand publishes the trials where a response was seen AND THE TRIALS WHERE IT WAS NOT, and states on the pack the crop-and-soil combinations where it does not recommend the product at all — selling the part that is true and refusing the part that is not. It costs ₹1.84 crore of Year-3 revenue and is the only defensible position in a category where everyone else claims everything.**

This plan models an operator requiring **₹6.40 crore** (₹2.60 crore investor + ₹1.90 crore term loan + ₹1.20 crore promoter + ₹70 lakh working capital), moving from **₹9.00 crore revenue and an ₹86 lakh loss to ₹42.00 crore revenue and ₹4.20 crore profit** by Year 3 — a 10.0% net margin and 36.4% return on capital. (Bio-inputs manufacturing — figures illustrative.)

2. Business Description, Vision & Legal Structure

Concept: A living product sold with proof that it is still alive.

Vision: To be the bio-input a sceptical farmer buys because the count is on the label and the failures are published.

Mission: State the CFU at manufacture and guarantee it at expiry; test retained samples at expiry and publish what failed; name the strain; print a shelf life the organism can actually survive; publish the trials where nothing happened; and de-list a retailer who cannot store it.

Legal structure

- **Private Limited** — recommended. Bio-fertiliser and bio-pesticide registrations, contract-manufacturing agreements, certification listings and institutional supply all assume it.
- **LLP or proprietorship** — the form of most of the category's several thousand small units, and a reason the enforcement record is what it is.
- **A quality function that can destroy a batch**, reporting to the promoter and not to production — **because a viability failure discovered at expiry is worthless if the person who finds it reports to the person whose output it condemns.**

Regulatory anchor: a manufacturer of living organisms sitting across two different legal regimes, which is where much of the category's confusion originates. **Bio-fertilisers are specified under the Fertiliser (Control) Order, which sets minimum CFU counts, carrier and liquid specifications and — critically — a shelf life and a count that must hold to the end of it, so a product below count at expiry is a non-standard fertiliser and not merely a disappointment. Bio-pesticides are regulated as pesticides under the Insecticides Act and require registration with the Central Insecticides Board, with data on identity, potency, efficacy and safety; a microbial pesticide sold without that registration is an unregistered pesticide, which is what a good deal of "organic pest solution" sold in India actually is. A bio-stimulant is a third thing again, notified under the FCO with its own schedule, and the practical abuse is to sell an unregistered microbial under a bio-stimulant label because the pathway is easier — this plan does not do that, and states on each pack which regime the product is registered under.** Then: NPOP/PGS input listing where organic compatibility is claimed; labelling rules including strain, count, batch, manufacture and expiry; state licensing and manufacturing premises approval; GST; pollution consent for fermentation effluent; and EPF/ESI and POSH.

3. Promoter & Ownership

Led by a promoter with microbiology, fermentation or agri-input background. Three competences decide outcomes. *Fermentation and formulation science*, because keeping an organism alive in a bottle for nine months in Indian conditions is a genuinely hard technical problem and most of the category has simply not solved it. *The stomach for a modest claim*, since every competitor's label promises a yield increase and this one will promise a count. And *distribution discipline*, because a perfect product dies in a hot shop and the brand takes the blame. Ownership, equity & investor terms are editable inputs; **the quality function reports to the promoter, holds the authority to reject and destroy a batch, and its expiry-testing failures are published rather than filed.**

4. Market Analysis — India

The bio-inputs market is growing quickly and is trusted very little, and both facts have the same cause.

Demand drivers

- **Residue limits in export crops** — grapes, chillies, basmati and tea, where a chemical residue failure destroys a consignment.
- **Government promotion** of organic and natural farming, with subsidy and procurement support.
- **Resistance and soil fatigue** after decades of single-mode chemistry.

- **Organic certification requirements**, which restrict input choice to listed materials.
- **Horticulture and plantation intensity**, where per-acre spend supports a premium input.
- **Integrated pest management** programmes in institutional and contract-farming supply chains.

Market sizing (illustrative framing)

Layer	Definition	Indicative scale
TAM	Indian bio-fertiliser, bio-pesticide and bio-stimulant consumption	Growing fast; quality highly variable
SAM	Buyers who will pay for a verified count — export crops, certified organic, institutional	Bounded by SHELF LIFE and COLD CHAIN reach
SOM (Yr 1-3)	Own-label plus contract manufacturing	₹9cr → ₹42cr; 0.61m → 2.83m units

Revenue mix and share (Year 3)

Stream	Share of revenue	Why it is there
Liquid bio-fertiliser	31.9%	Volume core; longest viability challenge
Bio-pesticide	28.1%	Registered under the Insecticides Act; higher realisation
Bio-stimulants, seaweed & humic	14.8%	Non-living; stable; funds the living range
Mycorrhiza & granular carriers	11.4%	Propagule count verifiable; long shelf life
Contract manufacturing	10.0%	Capacity utilisation between seasons
Diagnostics, viability testing & advisory	3.8%	Sells the measurement, not the bottle

The mix answers the category's basic commercial problem. Living products carry the credibility and the risk; the non-living lines — seaweed, humic, mycorrhiza carriers — are stable, storable and forgiving, and at 26.2% of revenue they fund the fermentation, cold chain and expiry testing that the living range requires. Contract manufacturing at 10% fills the plant between the two demand windows, and is accepted only where the customer will carry the same count-at-expiry guarantee on its own label — a condition that has cost four enquiries and is the point of doing it at all.

Constraints

- **Shelf life**, which physically bounds how far and how slowly the product can be distributed.
- **Cold chain beyond the gate**, which the manufacturer does not own but is judged on.
- **Category scepticism** — the single largest barrier, and self-inflicted by the industry.
- **Registration timelines** for microbial pesticides, which are long and data-heavy.

5. Competition & Position

Competitor type	Strength	Weakness this plan exploits
Small unregistered bio-input units	Very low price, generous dealer margin, fast supply	Product frequently dead or never alive; no count, no strain, no test

Large agri-input companies' bio ranges	Distribution, brand, registrations, farm force	Bio range is a defensive add-on; counts stated at packing only
State bio-fertiliser production units	Subsidised price, official channel	Variable quality control; limited cold chain and distribution
Imported bio-stimulant brands	Formulation quality, data, premium positioning	Price; little living-organism range; limited Indian trial data
This plan	Count guaranteed at expiry, retained samples tested and failures published, strain named, negative trials disclosed	Shorter printed shelf life than competitors claim; refuses claims

The positioning is unusual because the honest move in this category is to make the product look worse on the shelf. A competitor prints a twenty-four-month shelf life because nothing stops him; this brand prints nine months for the same organism because that is how long the storage trial says it survives, which means a buyer comparing labels sees a shorter life and no yield promise. The counter is the only one available: the count is guaranteed at the END of that life, retained samples are tested to prove it, and the failures are published. Export-crop growers, certified-organic farms and institutional IPM buyers respond first, because they are the buyers for whom a dead input has a consequence they can measure.

The cost of the honest position is stated in rupees rather than implied. Declining to claim yield increases the trials do not support, and stating the crop-and-soil combinations where the product should not be used, forfeited an estimated ₹1.84 crore of Year-3 revenue. Printing the true shelf life rather than the competitive one costs ₹62 lakh in channel resistance and returns. Batches destroyed on viability failure at expiry and stock recalled cost ₹94 lakh. De-listing retailers who cannot store the product removed ₹48 lakh of distribution. Against that: repeat purchase at 71% in a category where trial-and-abandon is the norm, and an export and institutional book that will not buy from anybody who cannot produce a test certificate.

6. The Category That Spent Its Credibility

This section exists because no honest plan in this category can begin anywhere else.

What the farmer experiences	What actually happened	Why he cannot tell
Applied it, saw nothing	The product was dead on arrival	A dead bottle looks identical to a live one
Applied it, saw nothing	It was alive but this soil suppresses it	Both produce the same non-event
Applied it, saw nothing	It worked slowly and cumulatively	The effect is real and invisible in one season
Applied it, saw nothing	It was never a registered product at all	The label said "organic solution"
Applied it, saw something	The rain came, or the chemical he also sprayed worked	Nothing was controlled

Five different causes, one identical observation — and that is the whole problem. Because the outcome cannot separate the honest product from the fraudulent one, the market has no mechanism to reward quality, and a market with no such mechanism will converge on the cheapest possible cost of goods, which for a living

product means not putting the organism in. It has been possible in India to fill, label and sell water for years without a single farmer being able to prove it, and the predictable happened. The farmer's conclusion that biologicals do not work is not ignorance; it is a correct inference from a sample of products that mostly did not.

The consequence for an honest manufacturer is severe and worth stating plainly: **HE CANNOT DIFFERENTIATE ON RESULTS**, because results are precisely what the category has rendered uninformative. Nothing he can say about performance is distinguishable from what a fraudulent competitor says, and any yield claim he makes places him in the same bucket. **THE ONLY REMAINING GROUND IS A MEASUREMENT THE SCEPTIC CAN CHECK HIMSELF** — a count, on a retained sample, at expiry, with the failures published. This is the general rule the plan contributes: **WHERE A CATEGORY'S REPUTATION HAS ALREADY COLLAPSED, THE ONLY ENTRY IS VERIFIABLE MEASUREMENT, BECAUSE CLAIMS ARE WHAT COLLAPSED IT.**

It is worth being precise about who is responsible, because "the industry" is not a useful defendant. Three parties each made a locally rational decision: the small manufacturer who found that a bottle without the organism costs a third as much and cannot be detected; the retailer who stocks whatever carries the best margin and stores it in a tin shed because nobody has ever told him it matters; and the regulator whose specification sets a count at the point of manufacture, which is the one moment at which almost every product in the market genuinely complies. The FCO count is real and is met; the product still arrives dead, because the standard measures the wrong day. That is why this plan's central commitment is not a higher count but the **SAME** count measured at a **DIFFERENT TIME**.

7. What Is Measured, Guaranteed and Published

Four commitments, each chosen because a buyer can check it without trusting anybody.

☐ **THE COUNT IS STATED AT MANUFACTURE AND GUARANTEED AT EXPIRY.** The vertical's anchor established that a potency guarantee verified at packing is not a guarantee; for a living organism it is barely even a statement, because the number on the day of filling tells the buyer nothing about the day he opens it. So every pack carries the CFU or spore count at manufacture **AND** the count guaranteed at the printed expiry, and the printed expiry is derived from real accelerated and ambient storage trials at Indian temperatures rather than from what the competition prints. For several liquid bio-fertilisers this produces a nine-month life where the category routinely claims twenty-four, and the shorter number goes on the pack.

☐ **RETAINED SAMPLES ARE TESTED AT EXPIRY AND THE FAILURES ARE PUBLISHED.** Every batch is retained and plated at its own expiry date, which is the only test that verifies the guarantee actually made. In Year 3, 2,940 batch-expiry tests were run and 74 batches fell below the guaranteed count — a 2.5% failure rate, published by batch number with the outcome for each: stock recalled where still in trade, buyers refunded, and the formulation or carrier changed where a pattern appeared. A viability programme that never reports a failure is not testing, per the library's rule that a gate with no rejections is not a gate; this one costs ₹94 lakh a year and its published failure rate is the brand's principal marketing asset.

☐ **THE STRAIN IS NAMED, NOT DESCRIBED.** "Beneficial microbes", "consortia of soil organisms" and "plant growth promoting bacteria" are the category's characteristic label language and they are unfalsifiable — nobody can test a product against them. Every pack here states genus, species and the internal strain code, with the deposit reference where the strain is deposited, so an independent laboratory can identify what is in the bottle and confirm it is what was sold. Naming the strain also makes efficacy data meaningful, since a

Trichoderma harzianum result belongs to a strain rather than to a genus.

□ AND THE EFFICACY POSITION IS DELIBERATELY MODEST, INCLUDING WHERE IT IS NEGATIVE. Biologicals are conditional: soil pH, organic carbon, moisture, temperature, existing microbial population and the chemicals applied alongside them all determine whether an organism establishes at all. So the trial summary published with each product states the crops and soils where a response was measured, the size of that response as a range rather than a best case, AND the trials where no significant response was seen — 31 of 96 multi-location trials in Year 3. The pack states the combinations where the product is NOT recommended. Per the organic-dairy rule, sell the part that is true and refuse the part that is not; the refusal costs ₹1.84 crore and is what makes the rest believable.

8. Operations Plan (ferment, formulate, verify, cold-chain, monitor)

Strain and fermentation

- **Master and working cell banks maintained** with periodic purity and identity checks, so the organism sold in Year 3 is the one the trials were run on.
- **Submerged fermentation with in-process count monitoring**, and a batch discarded on contamination rather than filtered and passed.
- **Solid-state and carrier production** for mycorrhiza and granular lines, with propagule counts verified.
- **Fermentation capacity utilisation reported**, since a living-product plant idle between seasons is the category's core cost problem.

Formulation, filling and the shelf-life question

- **Carrier and formulation selected for survival, not cost** — the single decision that determines whether the product is alive at the farmer's gate.
- **Storage trials at Indian ambient temperatures**, run to failure, to set the printed shelf life.
- **Printed expiry derived from those trials** and never extended for commercial reasons.
- **Batch, strain, count-at-manufacture and count-guaranteed-at-expiry printed on every pack.**

Verification

- **Every batch retained and plated at its own expiry date**, with results published by batch number.
- **Failures acted on** — recall of stock still in trade, buyer refund, and formulation change where a pattern emerges.
- **Independent laboratory cross-checks** on a sample of batches, so the count is not only self-reported.
- **Contamination and identity testing**, including confirmation that the strain in the pack is the strain on the label.

Distribution and the cold chain the brand does not own

- **Cold or controlled storage from plant to distributor**, with temperature logged rather than assumed.
- **Retailer storage audited** before appointment and during the season.
- **Retailers de-listed where storage fails** — 34 in Year 3, costing ₹48 lakh of distribution.
- **Stock rotated and returned before expiry** rather than left to be sold at the end of its life.

The operational hinge is the pallet that has been sitting in a distributor's shed through May. The organism does not announce its death, the pack looks perfect, the distributor wants to sell it and the sales manager has a target — and everything about the situation points toward letting it go. So the decision is removed from the

people under pressure: temperature excursions are logged automatically, stock past a storage threshold is recalled by system rule rather than by judgement, and the sales function has no authority to release it. The system refuses rather than warns, per the library's rule, because a warning at that moment is a warning to somebody who very much wants to ignore it.

What an independent laboratory can check without trusting this company

- **That the organism named on the pack is the organism in the bottle** — because genus, species and strain code are printed, with a deposit reference.
- **That the count meets the number guaranteed for that date** — because a count is guaranteed at expiry rather than only at packing.
- **That the batch tested matches the batch sold** — because retained samples are held against batch numbers that appear on the pack.
- **That the published failure list is not curated** — because every batch is tested, not a selected sample, and the total tested is published alongside the failures.
- **That the product is registered under the regime its claims require** — because the pack states the regime and the registration number.

Every item on that list is checkable by somebody who assumes this company is lying, which is the design criterion. A farmer will not run any of these tests, and that is not the point: the buyer who does — an export packhouse, a certification body, an institutional purchaser, a journalist, a competitor hoping to embarrass — creates the risk of exposure that makes the commitments credible to the farmer who cannot test anything. Verification works by being available, not by being used.

9. Registration, Labelling & Operating Compliance (India)

- **Company & tax** — Private Limited, PAN/TAN, GST, factory licence, premises approval.
- **Bio-fertilisers** — specified under the Fertiliser (Control) Order with minimum CFU counts, carrier and liquid specifications, and a shelf life to which the count must hold; **a product below count at expiry is a non-standard fertiliser, not merely a disappointment.**
- **Bio-pesticides** — registration with the Central Insecticides Board under the Insecticides Act, with identity, potency, efficacy and safety data; **a microbial pesticide sold without it is an unregistered pesticide, which is what much "organic pest solution" in the market actually is.**
- **Bio-stimulants** — a separate FCO schedule; **the characteristic abuse is selling an unregistered microbial under a bio-stimulant label because the pathway is easier, and this plan states on each pack which regime the product is registered under.**
- **Organic compatibility** — NPOP/PGS input listing where claimed, naming the certifier and list rather than printing "organic" as decoration.
- **Labelling** — strain, count at manufacture, count guaranteed at expiry, batch, manufacture and expiry dates, and the not-recommended combinations.
- **Environment & workforce** — pollution consent for fermentation effluent, biosafety handling, EPF/ESI and POSH.

10. Organisation & Manpower Plan

Function	Yr 1	Yr 3	Notes
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Promoter / managing director	1	1	Owns the publication policy
Fermentation & production	9	24	Batch discarded on contamination, not filtered
Microbiology & viability laboratory	5	13	Plates every batch at its own expiry date
Quality assurance & release	2	5	Reports to promoter; authority to destroy a batch
Field trials & agronomy	4	11	Publishes negative trials too
Cold chain, warehouse & logistics	4	12	Temperature logged, not assumed
Sales & channel	6	18	No authority to release recalled stock
Finance, regulatory & admin	4	10	Registrations across two regimes
Total	35	94	Laboratory and QA at 19% of headcount

Nineteen per cent of headcount in the laboratory and quality function is roughly double what a comparable formulation business would carry, and it is the plan. In a category where the product's defining property cannot be observed by the customer, the measurement function IS the product — everything else fills bottles. Quality reports to the promoter and holds the authority to destroy a batch, because a viability failure found at expiry is worthless if it is reported to the person whose production it condemns and whose despatch target it breaks.

The sales function is the one deliberately built weaker than a competitor's, and the reason should be stated rather than discovered. Its people cannot promise a yield increase, cannot claim the product works everywhere, cannot release recalled stock and cannot offer a shelf life longer than the trials support — four of the five things a bio-input salesman in India ordinarily sells on. What is left is a count, a test certificate and a list of the places the product does not work, which converts far less often and converts to a customer who returns. Repeat purchase at 71% against a category norm of trial-and-abandon is the whole return on that constraint, and it takes two seasons to appear — which is a real financing requirement rather than a presentational point.

11. Implementation Timeline & Milestones

Phase	Window	Milestones
Formation & plant	Month 0-7	Incorporation, fermentation hall, laboratory, FCO registrations
Strain bank & storage trials	Month 3-11	Cell banks, ambient storage trials run to failure, shelf lives set
Bio-pesticide registration	Month 5-20	CIB data package; first microbial pesticide registrations
Verification programme	Month 8-14	Batch retention, expiry plating, first published failure report
Cold chain & channel	Month 10-22	Temperature-logged distribution; retailer storage audits and de-listings
Scale & contract manufacturing	Month 20-36	2.83m units; contract lines carrying the same expiry guarantee

Training and competence

- **Aseptic technique and contamination discipline** for fermentation staff.
- **Plating, enumeration and identity confirmation** for laboratory staff, with independent cross-checks.

- **Trial design and honest reporting** for the agronomy team, including how to publish a null result.
- **Cold-chain handling and audit** for logistics and channel staff, including the storage conditions that trigger a recall.

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions, not forecasts or guarantees. They exist to show the drivers of a bio-inputs P&L and how the verification and disclosure disciplines move them. Every input is editable. **The defining economics are that gross margin is high — the raw material of a bio-fertiliser is cheap — and that the cost of proving the product is alive is what separates this business from the units that sell the same bottle without the organism in it.**

12.1 Project cost & funding

Item	₹ lakh	Notes
Land, building & fermentation hall	186	Aseptic layout; effluent handling
Fermenters, downstream & filling	164	Submerged plus solid-state lines
Microbiology laboratory & storage-trial chambers	86	Where the shelf life is actually determined
Cold chain — plant store, reefers, loggers	72	The product dies in transit or it does not
Registrations, trials & data packages	58	CIB registrations; multi-location trials
Utilities, effluent & pollution consent	34	Fermentation effluent load
Systems, batch traceability & publication	18	Batch-level results published
Working capital & contingency	22	Seasonal build; retained-sample stock
Total project cost	640	₹260L investor + ₹190L term loan + ₹120L promoter + ₹70L WC

12.2 Operating metrics

Metric	Yr 1	Yr 2	Yr 3
CFU/spore count stated at manufacture AND guaranteed at printed expiry / shelf life set from real ambient storage trials / expiry extended for commercial reasons	100% / 100% / NIL	100% / 100% / NIL	100% / 100% / NIL
Batch-expiry viability tests on retained samples / batches BELOW the guaranteed count / results published by batch number	620 / 34 (5.5%) / 100%	1,480 / 52 (3.5%) / 100%	2,940 / 74 (2.5%) / 100%
Genus, species and strain code named on pack / packs labelled only "beneficial microbes" / regime of registration stated on pack	100% / NIL / 100%	100% / NIL / 100%	100% / NIL / 100%
Multi-location trials published / of which showing NO significant response — published / not-recommended crop-soil combinations printed on pack	28 / 11 / 100%	54 / 19 / 100%	96 / 31 / 100%
Retailers de-listed for storage failure / temperature-logged despatches / stock recalled on storage excursion by system rule	9 / 100% / 100%	21 / 100% / 100%	34 / 100% / 100%

Units despatched / blended realisation / fermentation utilisation / repeat purchase	0.61m / ₹143 / 41% / n/a	1.42m / ₹143 / 63% / 64%	2.83m / ₹143 / 82% / 71%
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Row two is the row that is the product, and its second number must be visible rather than zero: 74 batches below the guaranteed count in Year 3, published by batch number with the recall and refund outcome for each. The failure rate falling from 5.5% to 2.5% is the formulation and cold chain improving; a rate of zero would mean the testing had stopped being real. Row four's 31 trials showing no significant response are published alongside the 65 that did, because a category destroyed by selective claims cannot be rebuilt with selective evidence. The blended realisation of ₹143 in row six is stated per the library's rule with its underlying figures — bio-pesticide ₹196, liquid bio-fertiliser ₹118, contract manufacturing ₹92 — since the blend moves with mix rather than with price.

12.3 Revenue build

Stream	Yr 1 (₹L)	Yr 2 (₹L)	Yr 3 (₹L)	Driver
Liquid bio-fertiliser	290	680	1,340	Volume core; ₹118 per unit
Bio-pesticide	250	590	1,180	CIB-registered; ₹196 per unit
Bio-stimulants, seaweed & humic	130	310	620	Non-living; stable; funds the living range
Mycorrhiza & granular carriers	95	230	480	Propagule count verifiable
Contract manufacturing	105	220	420	₹92 per unit; same expiry guarantee required
Diagnostics, viability testing & advisory	30	70	160	Sells the measurement
Total revenue	900	2,100	4,200	Illustrative

12.4 P&L summary

Line	Yr 1 (₹L)	Yr 2 (₹L)	Yr 3 (₹L)
Revenue	900	2,100	4,200
Cost of goods sold	(495)	(1,113)	(2,142)
Gross profit	405	987	2,058
Fermentation & plant operations	(112)	(184)	(296)
Viability laboratory & expiry testing	(72)	(112)	(168)
Field trials & efficacy programme	(64)	(96)	(142)
Cold chain & distribution	(52)	(108)	(186)
Batch recall, refund & expiry write-off	(30)	(58)	(94)
Sales & agronomy	(82)	(142)	(218)
Marketing & farmer demonstration	(36)	(58)	(86)
Admin, regulatory, insurance & other	(60)	(96)	(148)
EBITDA	(103)	133	720

Depreciation & amortisation	(78)	(96)	(118)
Finance cost	(52)	(72)	(96)
Other income — bio-input promotion grant (tapering), technology licensing & interest (disclosed)	118	122	54
PBT	(115)	87	560
Tax	29	(23)	(140)
PAT	(86)	64	420
Net margin	(9.6%)	3.0%	10.0%
ROCE	(13.6%)	10.2%	36.4%

Three lines carry the whole argument and are shown separately rather than buried in overheads: the viability laboratory at ₹1.68 crore, the efficacy programme at ₹1.42 crore, and recall and write-off at ₹94 lakh — ₹4.04 crore in Year 3, or 9.6% of revenue. A competitor operating without any of them enjoys almost that entire sum as additional profit and sells a product a farmer cannot distinguish from this one at the counter. That is the honest description of the competitive position: the cost of proving the product is alive is very close to the cost of not putting the organism in at all, which is exactly why so many have chosen the second course, and why the category is where it is. The other-income grant is disclosed separately and tapers from ₹1.18 crore to ₹54 lakh, so Year 3's profit stands on trading rather than on support.

12.5 Break-even & sensitivity

Scenario	Yr 3 revenue	Yr 3 PAT	Comment
Base	₹42.0cr	₹4.20cr	As modelled
No expiry-testing or trial publication programme	₹43.8cr	₹6.94cr	What the category's economics actually reward
Yield claims made as competitors make them	₹43.8cr	₹5.58cr	The ₹1.84cr forgone, restored
Fermentation utilisation 82% → 58%	₹32.4cr	₹1.46cr	Idle plant between seasons
Expiry failure rate 2.5% → 7%	₹42.0cr	₹2.62cr	Recall, refund and reputational cost
Cold chain fails in one region	₹38.6cr	₹2.04cr	Recall plus channel rebuild

13. Funding Requirement & Bankability

Source	₹ lakh	Terms (indicative)
Investor equity	260	Growth capital; verification and publication covenants
Term loan	190	Plant, laboratory and cold chain; 6–7 years
Promoter contribution	120	Cash and strain library
Working capital facility	70	Seasonal build; retained stock
Total	640	Illustrative structure

The bankability case rests on an asset that does not appear on the balance sheet: a published record of batch-level viability testing going back three years, including its failures. In a category where the buyer cannot verify the product and has learned not to try, that record is the only durable barrier to entry available — a competitor can copy the formulation in a season and cannot copy three years of published expiry results. It is also what makes the export and institutional book accessible, since those buyers require a certificate of analysis and increasingly a viability result rather than a brochure. A lender should read the expiry-failure rate as the credit indicator: rising means the formulation or cold chain is degrading, and falling to zero means the testing has stopped being honest.

- **Use of funds** — 29% building and fermentation hall, 26% equipment, 13% laboratory and storage-trial chambers, 11% cold chain, 9% registrations and trials, balance utilities, systems and working capital.
- **Repayment** — term loan from Year 3 cash flow with a moratorium through registration and trial build; working capital revolving against the seasonal cycle.
- **Investor exit** — strategic sale to an agri-input group building a biologicals portfolio, a global bio-solutions company seeking Indian manufacture, or promoter buyback.

14. Risk Analysis & Mitigation

Risk	Impact	Mitigation
A dead product is indistinguishable from a working one	A bio-fertiliser at zero count looks, pours and smells exactly like one at specification, and because genuine biologicals work slowly and conditionally, a farmer who sees nothing cannot separate "this was inert" from "this is how they behave" — so it has been possible to sell water for years without being caught, and a great deal has been	The honest manufacturer CANNOT differentiate on outcome, because outcome is what the category rendered uninformative — so he differentiates on MEASUREMENT: CFU/spore count stated at manufacture AND GUARANTEED AT PRINTED EXPIRY from real ambient storage trials; RETAINED SAMPLES PLATED AT EXPIRY (2,940 tests) with 74 failures PUBLISHED BY BATCH NUMBER, stock recalled and buyers refunded; strain named to genus, species and code with deposit reference; and A SHORTER HONEST SHELF LIFE PRINTED — nine months where the category claims twenty-four
The temptation to extend the printed expiry	Nothing physically prevents printing twenty-four months, the competition does, the channel prefers it, and no farmer will ever prove otherwise	Printed expiry derived from storage trials RUN TO FAILURE at Indian ambient temperatures and NEVER extended for commercial reasons; the count guaranteed at that expiry rather than at packing; and the guarantee verified on retained samples on the date it matters — so an extended life would produce published failures in this company's own report
Over-claiming efficacy	Biologicals are conditional on pH, organic carbon, moisture, temperature, resident microflora and co-applied chemicals; a yield promise the trials do not support puts this brand in the same bucket as the ones that destroyed the category	Trial summaries published with each product state crops and soils where a response was MEASURED, the response as a RANGE rather than a best case, AND the trials showing NO significant response — 31 of 96 in Year 3; the pack states the combinations where the product is NOT RECOMMENDED; sell the part that is true and refuse the part that is not, at a cost of ₹1.84 crore of Year-3 revenue

The cold chain the brand does not own	A perfect product dies in a distributor's shed through May, the pack looks unchanged, the distributor wants to sell it and the sales manager has a target — every incentive points to letting it go	Temperature LOGGED rather than assumed from plant to distributor; retailer storage audited before appointment and during the season; 34 retailers DE-LISTED for storage failure at a cost of ₹48 lakh of distribution; and stock past a storage excursion recalled BY SYSTEM RULE with the sales function holding NO authority to release it — the system refuses rather than warns, because a warning goes to somebody who wants to ignore it
Selling an unregistered microbial under an easier label	Bio-pesticide registration under the Insecticides Act is long and data-heavy while a bio-stimulant pathway under the FCO is not, so the characteristic industry abuse is to relabel — and much "organic pest solution" in the Indian market is an unregistered pesticide	Each pack STATES WHICH REGIME THE PRODUCT IS REGISTERED UNDER, with the registration number; microbial pesticides sold only after CIB registration; no pest-control claim made on a product registered as a bio-stimulant; and NPOP/PGS listing claimed only by naming the certifier and the list rather than printing "organic" as decoration
Contamination or strain drift in production	A contaminated or drifted batch may pass a crude count while being the wrong organism entirely	Master and working cell banks with periodic purity and identity checks; batch DISCARDED on contamination rather than filtered and passed; identity testing confirming the strain in the pack is the strain on the label; and independent laboratory cross-checks on a sample of batches so the count is not only self-reported
Idle fermentation capacity between seasons	Utilisation at 58% takes Year-3 profit from ₹4.20cr to ₹1.46cr; a living-product plant cannot build stock ahead because the stock dies	Contract manufacturing at 10% of revenue filling the plant between windows — accepted only where the customer carries the same count-at-expiry guarantee on its own label, a condition that has cost four enquiries; non-living stimulant and carrier lines that can be made to stock; and a product range spanning both cropping seasons
A category-wide scandal or regulatory tightening	Enforcement action against the unregistered segment could disrupt channel and pricing across the whole category	Registration held under the correct regime for every product; batch records, storage trials and expiry results already documented to a standard an inspection would require; and a published record that positions this brand as the beneficiary rather than the subject of tightening — which is the commercial case for the whole verification programme

15. SWOT Analysis

Strengths - Count guaranteed at expiry, not at packing 2,940 batch-expiry tests with 74 failures published - Strain named to genus, species and code - Negative trials published; not-recommended combinations on pack - Temperature-logged cold chain with de-listing enforced	Weaknesses - Shorter printed shelf life than competitors claim - Verification costs 9.6% of revenue - Refuses the yield claims the channel expects - Living products cannot be built to stock
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Opportunities • Export crops where a residue failure destroys a consignment • Certified organic and institutional IPM buyers who require test certificates • Contract manufacturing carrying the same guarantee • Regulatory tightening against the unregistered segment • Selling the measurement as a service	Threats • A category-wide credibility event • Very low-cost unregistered competition • Cold-chain failure in a single region • Long and uncertain microbial registration timelines
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16. Recommended AiSevak Tools for This Business

- **Batch viability register** — count at manufacture, count guaranteed at expiry, and the expiry-date test result, published by batch.
- **Storage-trial tracker** — ambient and accelerated trials run to failure, setting the printed shelf life.
- **Strain and cell-bank records** — identity, purity checks and deposit references.
- **Trial publication module** — multi-location results including null findings and the not-recommended list.
- **Cold-chain logger & recall rule** — temperature excursions triggering automatic recall without sales override.
- **Retailer storage audit & de-listing register.**
- **Contribution per unit & fermentation utilisation dashboard** — by product line, never blended alone.

17. Key Assumptions & Notes

- **All financials are illustrative model assumptions, not forecasts, projections or guarantees.** Revenue, volumes, realisation, utilisation, failure rates and headcount are editable inputs; actual outcomes depend on formulation science, cold chain, registration timelines and channel behaviour. Figures are in Indian rupees.
- **The central integrity finding is that a dead bio-product and a working one are indistinguishable in the bottle, on the shelf and in the field.** A bio-fertiliser whose count has collapsed to zero looks, pours and smells exactly like one at specification; and because a genuine biological works slowly, partially and only in some conditions, a farmer who applies a dead product and sees nothing cannot separate "this was inert" from "this is how they behave". **Five different causes produce one identical observation, so the market has no mechanism to reward quality — and a market with no such mechanism converges on the cheapest cost of goods, which for a living product means not putting the organism in. It has been possible in India to fill and sell water for years without a farmer being able to prove it, and the predictable happened. The farmer's conclusion that biologicals do not work is not ignorance; it is a correct inference from a sample of products that mostly did not.**
- **The consequence is that an honest manufacturer CANNOT DIFFERENTIATE ON RESULTS, because results are exactly what the category has rendered uninformative — any performance claim he makes is indistinguishable from a fraudulent one and places him in the same bucket.** The only remaining ground is a measurement the sceptic can check himself. **So: the CFU or spore count is stated at manufacture AND guaranteed at the printed expiry, with that expiry derived from ambient storage trials run to failure at Indian temperatures rather than from what the competition prints — nine months for several liquid lines where the category routinely claims twenty-four. WHERE A CATEGORY'S REPUTATION HAS ALREADY COLLAPSED, THE ONLY ENTRY IS VERIFIABLE MEASUREMENT, BECAUSE CLAIMS ARE WHAT COLLAPSED IT.**

- **The guarantee is verified on retained samples on the date it matters, and the failures are published.** Every batch is retained and plated at its own expiry: 2,940 tests in Year 3, of which 74 fell below the guaranteed count — a 2.5% failure rate published by batch number with the outcome for each, stock recalled where still in trade, buyers refunded, and the formulation or carrier changed where a pattern appeared. **A viability programme that never reports a failure is not testing, per the library's rule that a gate with no rejections is not a gate; the falling rate from 5.5% shows the formulation and cold chain improving, and a rate of zero would mean the testing had stopped being real. The programme costs ₹94 lakh a year and its published failure record is the brand's principal marketing asset — a competitor can copy a formulation in a season and cannot copy three years of published expiry results.**
- **The strain is named rather than described, and the efficacy position is deliberately modest.** "Beneficial microbes" and "plant growth promoting bacteria" are unfalsifiable label language; every pack here states genus, species and strain code with the deposit reference, so an independent laboratory can confirm what is in the bottle. **And because biologicals are conditional on pH, organic carbon, moisture, temperature, resident microflora and co-applied chemicals, the published trial summary states where a response was measured, states it as a RANGE rather than a best case, and states the trials where NO significant response was seen — 31 of 96 in Year 3 — with the not-recommended crop-and-soil combinations printed on the pack. Sell the part that is true and refuse the part that is not; it costs ₹1.84 crore of Year-3 revenue and is what makes the rest believable.**
- **Two lawful regimes sit on one shelf and the pack says which.** Bio-fertilisers are specified under the Fertiliser (Control) Order with minimum counts and a shelf life to which the count must hold, so a product below count at expiry is a non-standard fertiliser rather than a disappointment; bio-pesticides require Central Insecticides Board registration under the Insecticides Act. **The characteristic industry abuse is to sell an unregistered microbial under the easier bio-stimulant pathway, which is what much "organic pest solution" in the Indian market actually is. Each pack here states the regime and the registration number, no pest-control claim is made on a bio-stimulant registration, and NPOP/PGS listing is claimed only by naming the certifier and the list.**
- **The cold chain the brand does not own is where the product actually dies.** A perfect batch degrades in a distributor's shed through May with the pack looking unchanged, the distributor wanting to sell it and the sales manager holding a target. **So temperature is logged rather than assumed, retailer storage is audited before appointment and during the season, 34 retailers were de-listed at a cost of ₹48 lakh of distribution, and stock past a storage excursion is recalled by system rule with the sales function holding no authority to release it — the system refuses rather than warns, because a warning at that moment goes to somebody who very much wants to ignore it.**
- **The economics are honest about what they reward.** The viability laboratory (₹1.68cr), the efficacy programme (₹1.42cr) and recall and write-off (₹94 lakh) total ₹4.04 crore in Year 3 — 9.6% of revenue — and are shown as separate lines rather than buried in overheads. **A competitor running none of them enjoys almost that entire sum as additional profit and sells a product the farmer cannot distinguish from this one at the counter. The cost of proving the product is alive is very close to the cost of not putting the organism in at all, which is precisely why so many chose the second course and why the category is where it is.** The bio-input promotion grant is disclosed separately and tapers from ₹1.18 crore to ₹54 lakh, so Year-3 profit stands on trading. Contribution and utilisation are reported per line rather than blended, and the blended realisation of ₹143 carries its underlying figures — bio-pesticide ₹196, liquid bio-fertiliser ₹118, contract manufacturing ₹92.
- **Compliance and professional advice.** FCO specification and labelling for bio-fertilisers including count at manufacture, count at expiry, strain, batch and dates; CIB registration for microbial pesticides; the separate bio-stimulant schedule; NPOP/PGS input listing where organic compatibility is claimed; state manufacturing licence and premises approval; pollution consent for fermentation effluent; biosafety handling; GST; and EPF/ESI and POSH. Professional advice should be taken on registrations, label claims, contract-manufacturing agreements and the terms of

the count-at-expiry guarantee.

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