



Detailed Project Report
On
Insect Based Protein Fish Feed Unit-Black Soldier
Fly (BSF)-10 TPD

Under MKUY

Name of the Entrepreneur/Entity:

Address:



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1. Project Summary

1	Name of the Enterprise (as per the Illustrative List of Enterprises)	Insect Based Protein Fish Feed Unit
2	Sector (as per the Illustrative List of Enterprises)	Fishery
3	Project Capacity ¹	10 MT/month
4	Key components of the project	Production of Fish Feed, Insect oil & Frass
5	Project Address (Village/Ward, Gram Panchayat/Municipality, Block, District)	
6	Products/Output from the project	Fish Feed, Insect Oil, Frass
7	Total Project Cost	Rs. 76,74,400
8	Fixed Capital Cost	Rs. 70,44,400
9	Working/Recurring capital (for four months)	Rs. 6,30,000
10	Bank Finance/ Self Finance	Bank Finance
11	Bank Loan Amount	Rs. 67,80,960
12	Promoter Contribution	Rs. 8,93,440
13	Assumed Rate of Interest	11%
14	Subsidy Eligibility (40%, 50%)	
15	Repayment Terms (Tenure, Moratorium, Frequency, Mode of Repayment: equal principal/equal instalment)	Equal Monthly Instalment
16	Key Financial Indicators:	
	1. Average Annual Net Profit	Rs. 27,69,931
	2. Debt Service Coverage Ratio (DSCR)	2.29
	3. Internal Rate of Return	38.47%
	4. Break Even Year	2 Years 5 Months
17	Estimated employment to be generated (nos.)	6

Note:

1. Customized DPR is to be prepared as per the information given by the beneficiary.
2. The CIS will be calculated as per the cost norm of MKUY guideline.
3. All the prices quoted here are indicative in nature.
4. The particulars under each component of the Capital Investment may be changed as per the requirement of the project.

¹ Capacity can be in terms of area or quantity



2. Project Profile

2.1 Entrepreneur/Entity Profile

1	Name of the Entrepreneur/Entity	
2	Legal status (Individual/ Group/ FPO/ FPC/ Proprietorship/ Partnership firm/ Company/ Cooperative/ Federation/ Society/ Trust)	
3	Name of Representative ² in Ease of entity	
4	Gender (Male/ Female/ Third Gender/ Not Applicable)	
5	Date of Birth of Individual/Representative of Entity	
6	Date of Incorporation/Registration of Entity	
7	Category opted for (Women/ ST/ SC/ Differently Abled/ Third gender/ Agri & Allied Graduate)	
8	Educational Qualification of Individual/Representative of Entity	
9	Passport size photograph of the Individual/ Representative of entity	
10	Local Address for Correspondence of the Individual/ Representative of entity	
11	Registered Address of Entity	
12	Main Office/Branch Address of Entity	
13	Phone no. of Individual/Representative of Entity	
14	Email Id of Individual/Representative of Entity	
15	AADHAR No. of Individual/Representative	
16	PAN of Individual/Representative of Entity, if available	
17	Farmer Id of Individual, if available	
18	Details of other Partner/Director/ President/Secretary	
19	Registration No./ CIN of the Entity ³	
20	PAN/TAN of Entity	
21	GSTIN of Entity, if available	
22	Details of experience and exposure relevant to the proposed enterprise/project (family business, work experience, e- learning/certificate courses, trainings undertaken etc.)	

² Representative should be authorized by the board/ governing body of the entity.

³ Registration document:

Groups (SHG/PG/): FPO: Proprietorship firm: Registration Certificate under Shops & Establishment Act, Partnership firm: Registration Certificate from IGR of state, Company (Pvt. Ltd., Public Ltd., LLP, OPC, FPC): Certification of Incorporation, Cooperative/ Federation: Certificate of Registration from Registrar of Cooperative Societies, Society/Trust: Darpan Unique Id



2.2. Project Consultant Details

DPR prepared by: APICOL, Baramunda, Bhubaneswar





2.3. Concept and Scope of the Project

The proposal is to install a modern Aqua (Fish and Shrimp) feed mill unit having an installed capacity of 10TPM. The unit will be operating throughout the year. Fish feed {Insect based} will be manufactured with a capacity of 10 MT /Month

Market: Odisha, Andhra Pradesh, Telangana, Jharkhand, Bihar, Tamil Nadu and Overseas Asian Countries

Employment Generation: 6

Marketing: Buy-back system

Proposed project aims for the setting up of modern mini-Fish feed {Insect based} mill of 10TPM. This unit will be equipped with state of art Grinder, Mixer, Extruder, drying, Weighing & packing unit. Most of raw materials can be procured locally, for example, there are many available feed ingredients considered as potential materials for Fish feed {Insect based}, including rice bran, maize, wheat bran, soybean cake, peanut dregs, dry grass powder etc.

The project will have following components

- Civil Construction of Modern Mini Fish feed {Insect based}
- Mill unit 10 MT /month capacity
- Rearing Unit
- Hatchery
- Shredder
- Drying
- Automatic Weighing& Packing
- The Unit would install a modern Fish feed {Insect based} mill unit having an installed capacity of 10 TPM.
- Total raw material requirement of the proposed unit, during the peak season of its production, will be about 15-20 TPM.
- The processing will be done throughout the year.

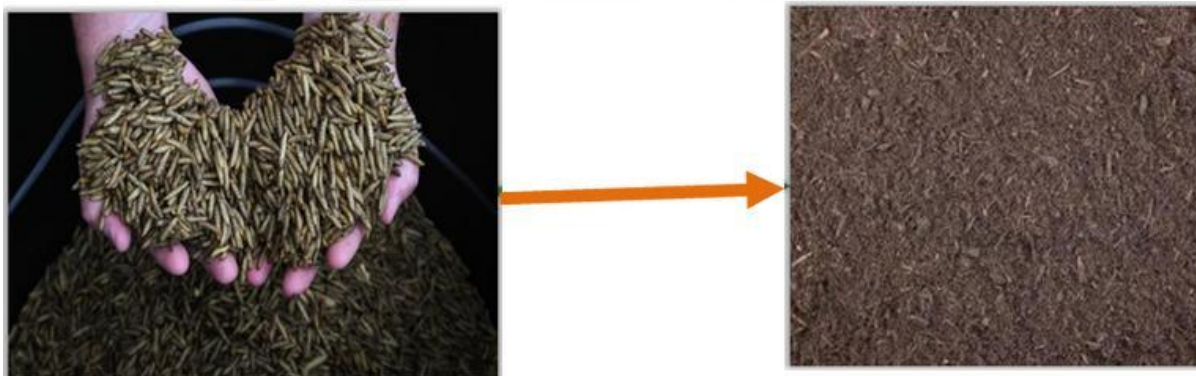
The capacity of the unit has been arrived at after giving due consideration to the market demand, the capacity of the promoters to procure raw material, and forward linkages of the promoters.

Operational Framework



The Black soldier fly's remarkable ability to transform nearly any kind of organic waste into protein could revolutionize the waste management portfolio and produce quality Insect feed.

Black soldier fly larvae are ferocious eaters, which makes them interesting as a potential feed source for fish, poultry & pigs, because they grow very fast. The adult flies are not a nuisance like house flies – they make no buzzing sound they do not bite, they do not carry zoonotic diseases and they deter the development of pest fly population. They tend to not fly and do not feed as adults, relying solely on their fat stores for energy. Black soldier fly larvae contain approximately 45-60% protein and 20-25% oil (on a dry matter basis) and are a good source of calcium and phosphorus. However, their composition is highly dependent on the materials they are grown on and the age at harvest



(MAGGOTS: THE WASTE TO VALUE CONVERTOR)

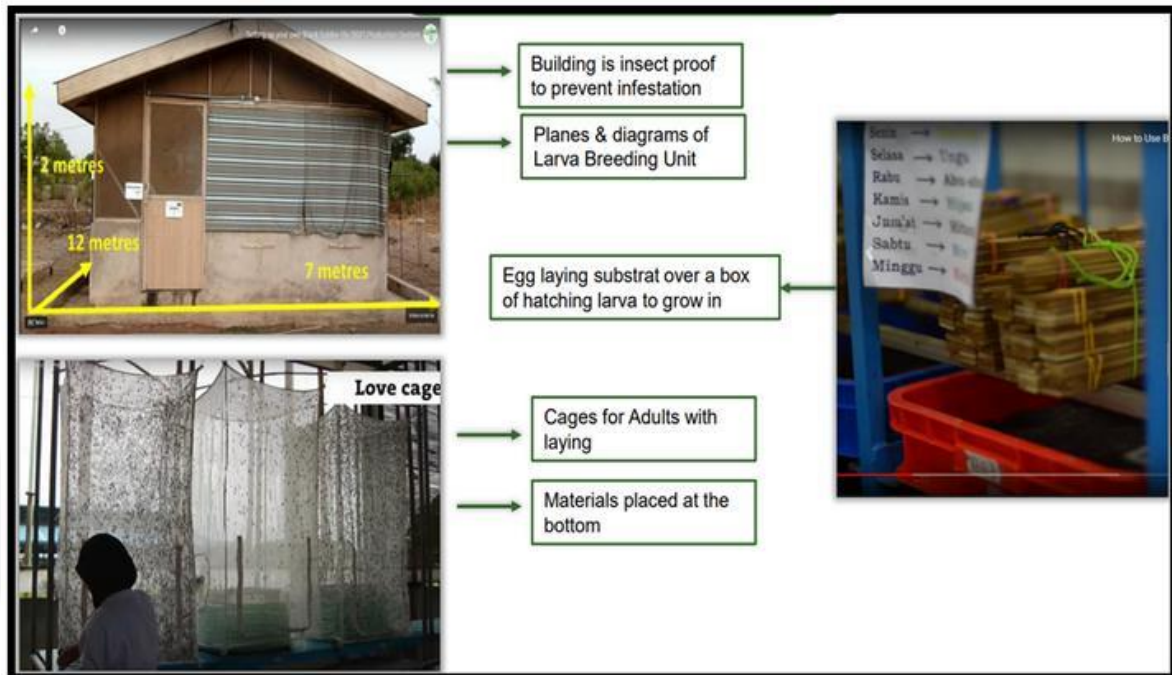
Farming Black Soldier Fly does not require high investments Knowledge – Capital - Land Resources. Also possible for the poor to farm BSF, access to animal protein and gain cash income. Farming BSF is possible at any scale of commercial undertaking, everywhere around the world and during the full year.



BSF Production includes 6 separate units

- Reception & Sorting
- Reproduction Colonies
- Production Unit
- Procession Unit for Animal Feed
- Compost Production

Packing & Storage



The Black Soldier Fly (BSF) production technology can lead the revenue stream through its conversion into high value larval products including lubricants, biodiesel, chitosan, and soil conditioners.



CONTAINER FOR 10TPD WASTE- IOT CONTROLLED

MAGGOTS: Waste to Value Convertor

The extraordinary capacity of the Black Soldier Fly to convert practically any type of organic waste into protein has the potential to revolutionise waste management.



Characteristics

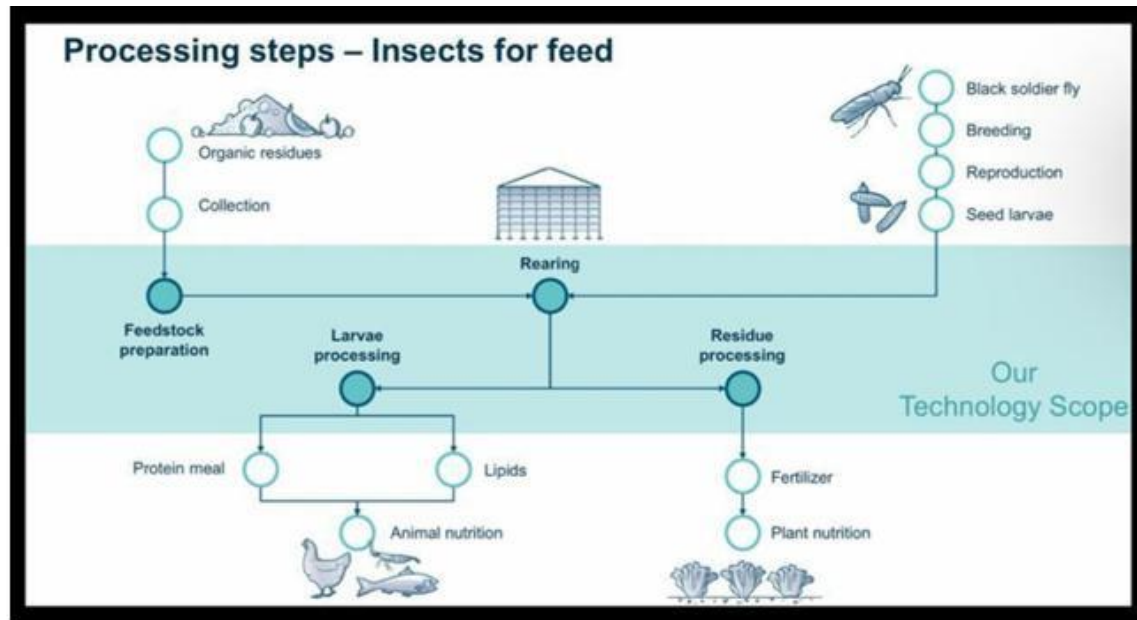
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Production Process

This is an integrated model for

- Waste Recycling
- BSF Hatching
- Protein Production



Sr. No.	Item Details	Area Required
1	4 Containers (10X40)	1600 sq ft
2	Hatchery (10X40)	400 sq ft
3	Crushers	80 sq ft
4	Fish Mill	220 sq ft
	Total	2300 sq ft

Total Space Available 67 decimals = 29182.52 Sq. Ft

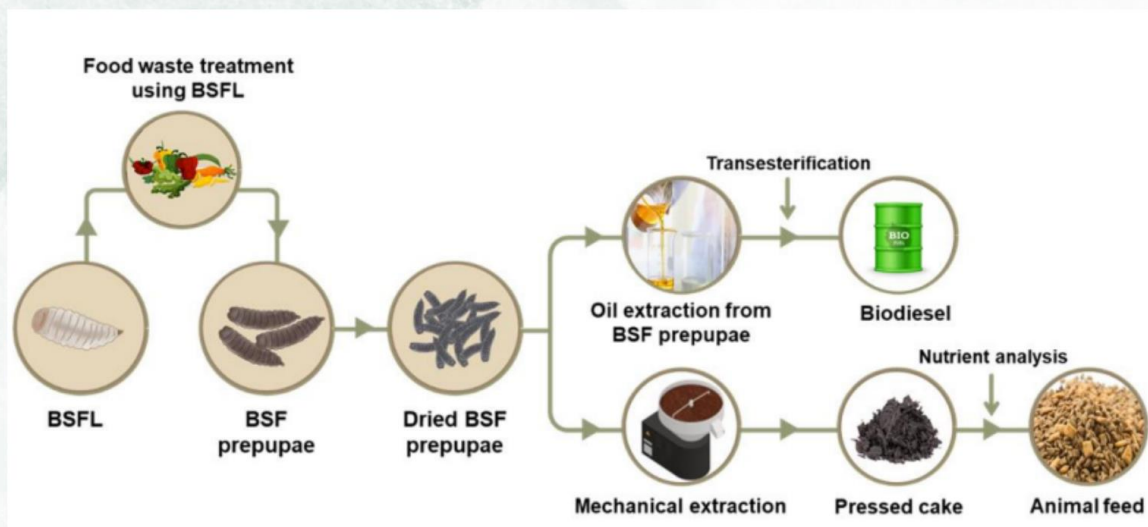
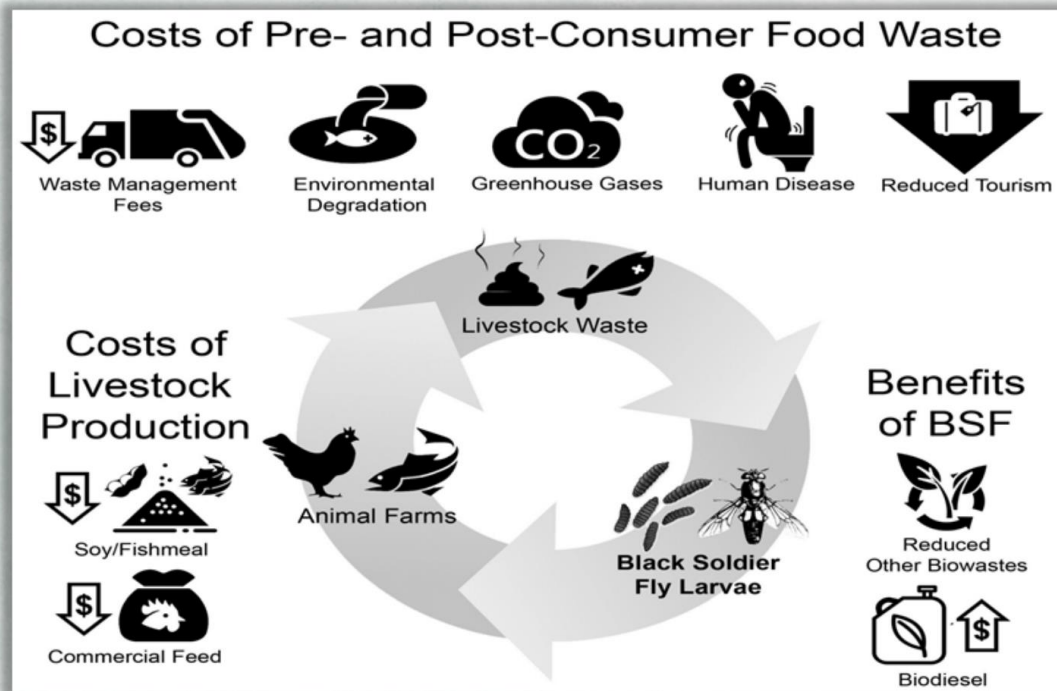


Waste Collection Process

Under local governance system SHGs are entitled to collect household wastages and are compensated through Swachh Bharat Mission (SBM). They have been trained on collection and segregation of wastes too. We are extending this service for a clean and green environment and livelihood.



Each SHG members are trained to collect, segregate and process household wastes every day. Each of the SHG members are paid Rs.5/- per house per month as per Swachh Bharat Mission (SBM). All the collected wastes will be dumped at the project site and processed into aqua feed via organic method. We take the responsibility to collect other market wastes from nearby places. Also, SHGs will be provided continuous training on collecting and processing wastes under health and sanitation program.





Techno-commercial Assumptions

Sl. No.	Parameter	Value	Unit
1	Increase in Rate of Product	5	%
2	Increase in Electricity consumption	5	%
3	Collection from Debtors (First Year)	7	Days
4	Collection from Debtors	7	Days
5	Payable to Creditors	7	Days
6	Drawing By Promoter	35	%
7	Increase in Staff Salary	5	%
8	Rate of Interest on TL	11	%
9	Rate of Interest on WC	9	%
10	Loan Repayment (in year)	7	Days
11	Raw Material in Stock (on sales)	4	Months
12	Finished Goods in stock (on sales)	15	Days
13	Promoter's Contribution (Term Loan)	10	%
14	Promoter's Contribution (Working Capital)	20	%
15	Working Capital Requirement	1	Months
16	Working Capital Utilisation	100	%
17	No. of working days	330	Days

3. Financial Details

Sl. No.	Item	Amount	Amount
1	Promoter's equity	893,440	893,440
2	Bank Finance		6,780,960
2A	Term Loan	6,780,960	
2B	CC Limit	-	
		7,674,400	
	Total		7,674,400



4.1. Project Fixed Capital

Details of Fixed Assets					
Sl. No.	Particulars	Unit	Qty.	Cost per unit (Rs)	Total (Rs)
A	Land				
1	Land Development	Sq. ft	22000	0.70	15,400
2	Fencing (Barbed wire)	ft	600	60.00	36,000
	Sub Total				51,400
B	Civil Construction				
1	Construction of shed (Polysheet, MS Fabrication and Foundation)	Sq.ft	1500	180.00	2,70,000
2	Office Room	Sq.ft	100	850.00	85,000
3	Store Room	Sq.ft	100	300.00	30,000
4	Sub Total				3,85,000
C	Water Supply				
1	Water Supply with Borewell, pump and pipe line			LS	1,50,000
D	Electrification				
1	Electrical Installation 10 KVA with two WBP/ DG Set/ Power Generator/ Any other back up system			LS	200,000
E	Plant & Machinery (all the machinery items to be specified)				
Sl. No.	Particulars	Specification	Qty	Unit Price (Rs)	Total (Rs)
a	Feed Plant				
1	Crusher (Motor-5 HP)	no	1	90,000	90,000
2	Mixer (Motor- 2 HP)	no	1	90,000	90,000
3	Single Screw Feed Pellet extruder for (1,2,3 & 4 mm Pellet) capacity- 100-150 Kg/Hr motor 27 HP	no	1	5,00,000	4,00,000
4	Screw Conveyor (Motor-2 HP)	no	2	50,000	1,00,000
5	Oil Coater (Motor-3 HP)	no	1	80,000	80,000
6	Grader (Motor- 1 HP)	no	1	90,000	90,000
b	BSF Plant				
1	Container modulated	nos	3	LS	18,00,000
2	Hatchery	nos	2	LS	13,00,000
3	Crates	nos	1800	LS	8,28,000
4	Shredder	nos	1	LS	2,00,000
5	Dryer	nos	1	LS	3,50,000
6	Cooler & Sprinkler			LS	8,50,000
	Sub Total		1	LS	61,78,000
G	Miscellaneous Expenditure				
1	Insurance premium of assets				60,000
2	Cost of DPR Preparation				18,112
3	Other miscellaneous exp.				3,894



Details of Fixed Assets					
Sl. No.	Particulars	Unit	Qty.	Cost per unit (Rs)	Total (Rs)
	Total Miscellaneous Expenditure				80,000

4.2. Project Variable Expenses

Details of Recurring Expenditure						
A	Details of raw material (per annum @ 100%)					
Sl. No.	Items	Unit	Rate/Unit (in Rs)	Qty/day	Qty/annum(kg)	Total (Rs)
1	Rice Bran (67%)	Kg	14.00		1,67,500	23,45,000
2	Groundnut Oilcake (10%)	Kg	33.00		25,000	8,25,000
3	Corn Meal (9.8%)	Kg	26.00		24,500	6,37,000
4	BSF powered meal (13%)	Kg	45.00		32,500	14,62,500
5	Minerals (0.2%)	Kg	215.00		500	1,07,500
6	Packaging	nos	5.00		5,000	25,000
	Total				2,55,000	54,02,000

Details of salary and other benefits				
Sl. No.	Type of Workers	No. of Worker	Salary Per Month/head (Rs)	Total Salary per Annum (Rs)
1	Supervisor	1	30,000	3,60,000
2	Skilled Labour	1	12,000	1,44,000
3	Unskilled Labour	4	8,000	3,84,000
	Grand Total	2		8,88,000

4.3. Details of Sales

Details of sales						
Sl. No.	Type of products	Unit	Rate/Unit (Rs)	Quantity/day	Quantity/annum	Total (Rs)
1	Fish Feed	Kg	70.00	400	1,32,000	92,40,000
2	Insect Oil	Ltr	80.00	60	3,000	2,40,000
3	Frass	Kg	5.00	1,300	4,29,000	21,45,000
	Total				5,64,000	1,16,25,000



4.4. Project Balance Sheet

Liabilities	I	II	III	IV	V	VI	VII
Opening Capital	-	2,367,930	2,926,651	3,485,429	4,044,416	4,606,320	5,175,615
Add: Introduced	893,440						
Add: Profit	2,269,490	2,135,722	2,435,778	2,736,987	3,042,904	3,356,295	3,412,339
Less: Drawing	795,000	1,577,000	1,877,000	2,178,000	2,481,000	2,787,000	3,006,000
Closing Capital	2,367,930	2,926,651	3,485,429	4,044,416	4,606,320	5,175,615	5,581,954
Term Loan from Bank	6,099,930	5,340,093	4,492,328	3,546,460	2,491,138	1,313,695	-
Current Liabilities							
Cash Credit from Bank	-	-	-	-	-	-	-
Sundry Creditors	126,047	132,370	138,997	145,950	153,253	160,930	160,533
Expenses Payable	181,700	190,800	200,300	210,400	220,900	232,000	237,100
Current Provisions	704,781	647,452	776,048	905,137	1,036,245	1,170,555	1,194,574
Total Current Liabilities	1,012,528	970,622	1,115,344	1,261,487	1,410,398	1,563,485	1,592,207
Total Liabilities	9,480,388	9,237,366	9,093,101	8,852,363	8,507,856	8,052,795	7,174,161
Assets							
Fixed Assets	6,964,400	6,964,400	6,964,400	6,964,400	6,964,400	6,964,400	6,964,400
Less Depreciation	1,010,200	1,871,545	2,606,096	3,232,631	3,767,135	4,223,219	4,612,470
Net Fixed Assets	5,954,200	5,092,855	4,358,304	3,731,769	3,197,265	2,741,181	2,351,930
Current Assets							
Sundry Debtors	271,300	284,900	299,100	314,100	329,800	346,300	345,400
Inventories	653,350	656,950	689,850	724,300	760,550	798,600	833,750
Cash and Bank Balance	54,300	57,000	59,900	62,900	66,000	69,300	69,100
Other Current Assets	2,547,238	3,145,661	3,685,947	4,019,294	4,154,242	4,097,415	3,573,982
Total Current Assets	3,526,188	4,144,511	4,734,797	5,120,594	5,310,592	5,311,615	4,822,232
Total Assets	9,480,388	9,237,366	9,093,101	8,852,363	8,507,856	8,052,795	7,174,161



4.5. Calculation of Depreciation

Rates of Depreciation		10%	15%	Total depreciation for the year (Rs)
Year	1	53,500.00	8,29,200	8,82,700
	2	48,150.00	7,04,820	7,52,970
	3	43,335.00	5,99,097	6,42,432
	4	39,001.50	5,09,232	5,48,234
	5	35,101.35	4,32,848	4,67,949
	6	31,591.22	3,67,920	3,99,512
	7	28,432.09	3,12,732	3,41,164

4.6. Projected P&L

Description	Year ending March 31st						
	I	II	III	IV	V	VI	VII
No of Working months	12	12	12	12	12	12	12
Capacity Utilisation	100	100	100	100	100	100	95
Revenue							
Sales	11,625,000	12,207,000	12,818,000	13,459,000	14,132,000	14,839,000	14,802,000
Opening Stock of Finished Goods	-	(581,250)	(610,350)	(640,900)	(672,950)	(706,600)	(741,950)
Closing Stock of Finished Goods	581,250	610,350	640,900	672,950	706,600	741,950	740,100
Total Income (A)	12,206,250	12,236,100	12,848,550	13,491,050	14,165,650	14,874,350	14,800,150
Expenditure							
Opening stock of Raw Material	-	72,100	75,700	79,500	83,400	87,600	92,000
Purchase (Net) of Material	5,402,000	5,673,000	5,957,000	6,255,000	6,568,000	6,897,000	6,880,000
Closing Stock of Raw material	72,100	75,700	79,500	83,400	87,600	92,000	91,800
Raw Material Consumption	5,329,900	5,669,400	5,953,200	6,251,100	6,563,800	6,892,600	6,880,200
Repair & Maintenance- Machinery (@1% of Cost)	69,130	72,600	76,300	80,200	84,300	88,600	93,100
Electricity expense	930,000	976,600	1,025,500	1,076,800	1,130,600	1,187,200	1,184,100
Insurance cost	60,000	63,000	66,200	69,600	73,100	76,800	80,700
Administrative salaries and wages	888,000	932,400	979,100	1,028,100	1,079,600	1,133,600	1,190,300
Other Misc Expenses [@1% of sales]	232,500	244,140	256,360	269,180	282,640	296,780	296,003
Total Cost	7,509,530	7,958,140	8,356,660	8,774,980	9,214,040	9,675,580	9,724,403
Profit Before Depreciation, Interest and Tax	4,696,720	4,277,960	4,491,890	4,716,070	4,951,610	5,198,770	5,075,747



Description	Year ending March 31st						
	I	II	III	IV	V	VI	VII
No of Working months	12	12	12	12	12	12	12
Depreciation	1,010,200	861,345	734,551	626,535	534,505	456,084	389,251
Profit Before Interest and Tax	3,686,520	3,416,615	3,757,339	4,089,535	4,417,105	4,742,686	4,686,496
Interest on Term Loan	712,249	633,441	545,514	447,411	337,956	215,836	79,584
Total Interest Paid	712,249	633,441	545,514	447,411	337,956	215,836	79,584
Profit Before Tax	2,974,271	2,783,174	3,211,826	3,642,124	4,079,149	4,526,850	4,606,912
Income Tax	704,781	647,452	776,048	905,137	1,036,245	1,170,555	1,194,574
Profit after Tax	2,269,490	2,135,722	2,435,778	2,736,987	3,042,904	3,356,295	3,412,339

4.7. Projected Cash Flow

Period Ending:	I	II	III	IV	V	VI	VII
Cash & Bank Balance at Beginning	-	54,300	57,000	59,900	62,900	66,000	69,300
Cash Inflow during the Period	10,490,588	3,003,390	3,315,051	3,509,664	3,726,320	4,022,293	4,355,042
Cash Outflow during the Period	10,436,288	3,000,690	3,312,151	3,506,664	3,723,220	4,018,993	4,355,242
Closing Cash & Bank Balance	54,300	57,000	59,900	62,900	66,000	69,300	69,100

4.8. Projected Loan Repayment

Year	Interest	EMI	Principal
1	712,249.05	1,393,278.68	681,029.63
2	633,441.09	1,393,278.68	759,837.59
3	545,513.57	1,393,278.68	847,765.11
4	447,411.18	1,393,278.68	945,867.50
5	337,956.49	1,393,278.68	1,055,322.18
6	215,835.84	1,393,278.68	1,177,442.84
7	79,583.52	1,393,278.68	1,313,695.15
Total	2,971,990.75	9,752,950.75	6,780,960.00



4.9. Calculation of DSCR, IRR and BEP

Calculation of DSCR							
Year	I	II	III	IV	V	VI	VII
Net Sales	11,625,000	12,207,000	12,818,000	13,459,000	14,132,000	14,839,000	14,802,000
Net Profit	2,269,490	2,135,722	2,435,778	2,736,987	3,042,904	3,356,295	3,412,339
Interest Paid	712,249	633,441	545,514	447,411	337,956	215,836	79,584
Cash Accruals (a)	2,981,739	2,769,163	2,981,292	3,184,398	3,380,861	3,572,131	3,491,922
Principal	681,030	759,838	847,765	945,867	1,055,322	1,177,443	1,313,695
Interest	712,249	633,441	545,514	447,411	337,956	215,836	79,584
Total (b)	1,393,279	1,393,279	1,393,279	1,393,279	1,393,279	1,393,279	1,393,279
DSCR	2.14	1.99	2.14	2.29	2.43	2.56	2.51
Average DSCR	2.29						

Calculation of Break-Even Point (BEP)							
Sales	12,206,250	12,236,100	12,848,550	13,491,050	14,165,650	14,874,350	14,800,150
Variable Cost	5,562,400	5,913,540	6,209,560	6,520,280	6,846,440	7,189,380	7,176,203
Contribution	6,643,850	6,322,560	6,638,990	6,970,770	7,319,210	7,684,970	7,623,947
Fixed Cost	3,669,579	3,539,386	3,427,164	3,328,646	3,240,061	3,158,120	3,017,035
BEP Sales	6,741,844	6,849,802	6,632,649	6,442,176	6,270,837	6,112,578	5,856,883
Average BEP sales	6,415,253						

Calculation of Internal Rate of Return (IRR)				
Sl. No.	Year	PAT	Depreciation	Cash Accrual
	Cash outflow at beginning			-7,674,400
1	31/03/2023	2,269,490	1,010,200	3,279,690
2	31/03/2024	2,135,722	861,345	2,997,067
3	31/03/2025	2,435,778	734,551	3,170,329
4	31/03/2026	2,736,987	626,535	3,363,522
5	31/03/2027	3,042,904	534,505	3,577,409
6	31/03/2028	3,356,295	456,084	3,812,379
7	31/03/2029	3,412,339	389,251	3,801,590
IRR		38.47%%		
Payback Period		2 Years 5 Months		



4.10. Summary of Project Cost

SI No	Name of Assets	Amount
1	Land Development	51,400
2	Civil Construction	385,000
3	Irrigation/Water Supply	150,000
4	Electrification	200,000
5	Plant & Machinery	6,178,000
6	Livestock	-
7	Insurance	60,000
8	DPR Cost	18,112
9	Other Miscellaneous Exp.	1,888
	Total Fixed Cost	7,044,400
	Recurring	630,000
	Cost of Project	7,674,400

2 Working Capital Requirement

	Heads of Expenses	Amount/year
A	Raw Material	54,02,000
B	Salary	8,88,000
C	Utilities	9,30,000
D	Other Expenses	2,32,500
	Sub total per year	74,52,500

Working capital requirement (for 4 months)

6,30,000