

Krishi Inspiro



Journey towards a Sustainable tomorrow!

Team: The One



Krishi Inspiro

NATURE'S PURIFIER

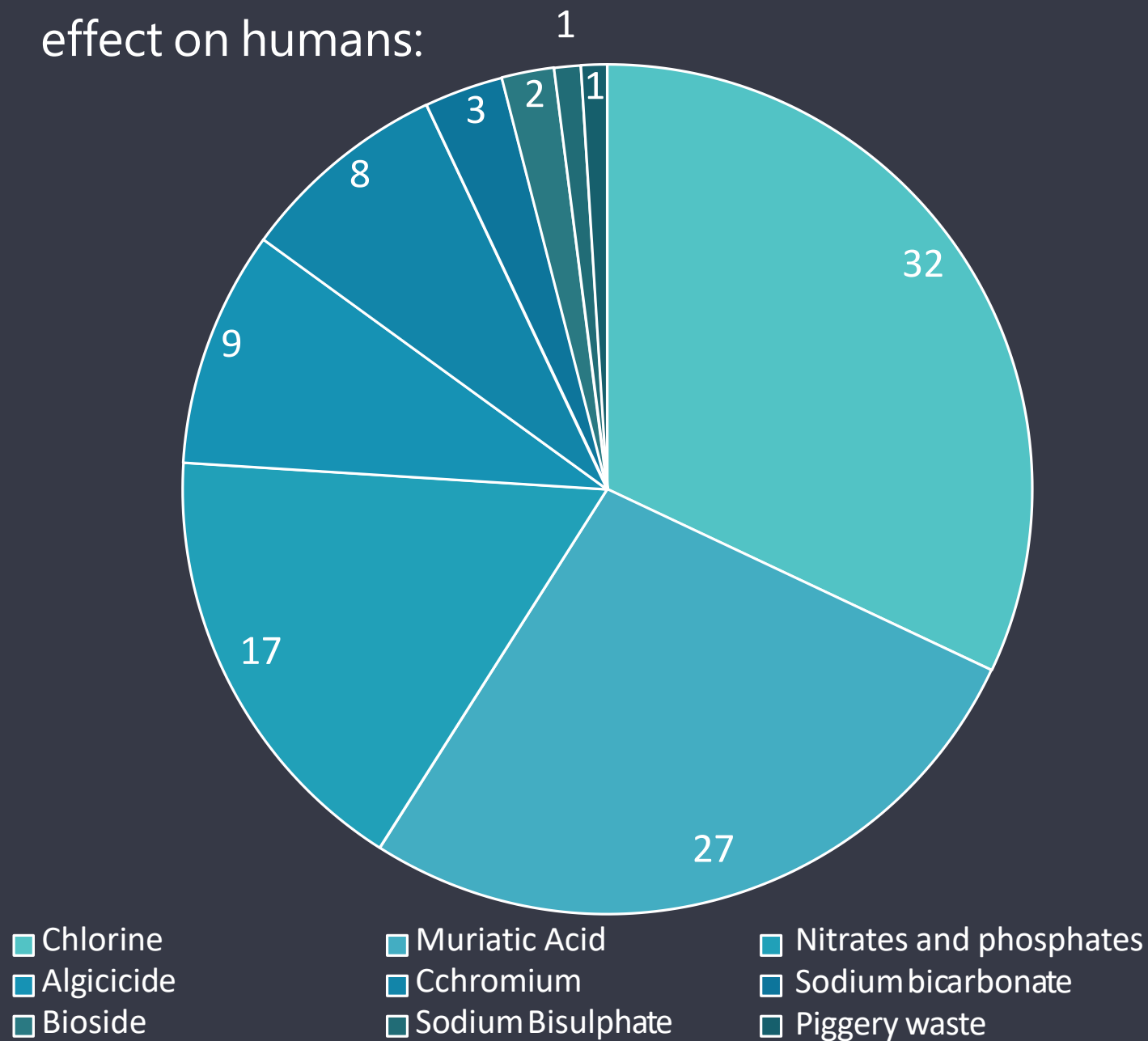
Problem Statement

Do you know the effects of micronutrients and harsh chemicals?

As per WHO survey

1.2 billion people are significantly compromised as industries dump **300 - 400 MT** of effluents each year Apart from chlorine, these chemicals were found to have a toxic

effect on humans:



Incomplete filtration

Only **59.26%** of water is treated, the rest of the **micronutrients** along with **chemical treatments** remain and enter water bodies and domestic waters.



Eutrophication

Deposition of these chemicals leads to the **degradation of water bodies, groundwater table**, and disruption in the food chain by **biomagnification**.



Lack of crop microclimate knowledge

It is a scientific parameter that determines:

- Water for irrigation
- Nutritional Requirements



Health Hazards

Water with even the slightest change in ppm causes:

- **Skin abnormalities**
- **Digestive and renal problems**

<https://www.who.int/news-room/fact-sheets/detail/drinking-water#:~:text=Key%20facts,water%20source%20contaminated%20with%20faeces.>

Problem survey

Severity

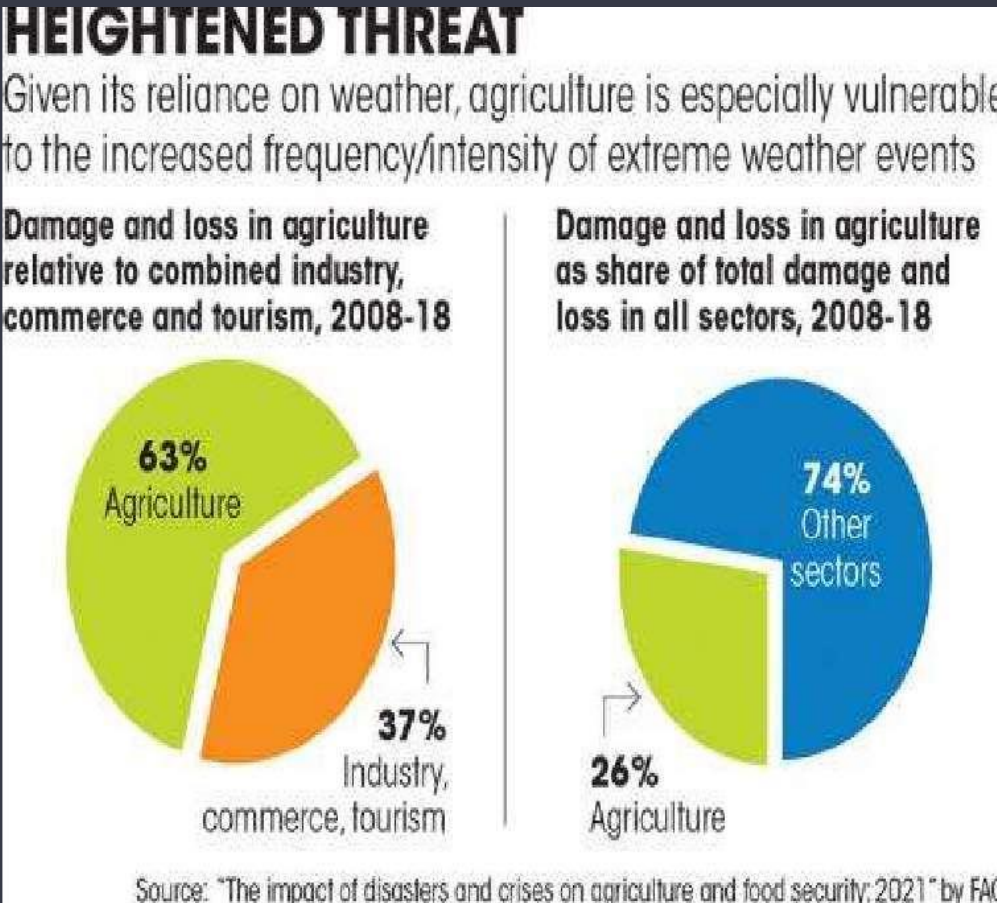
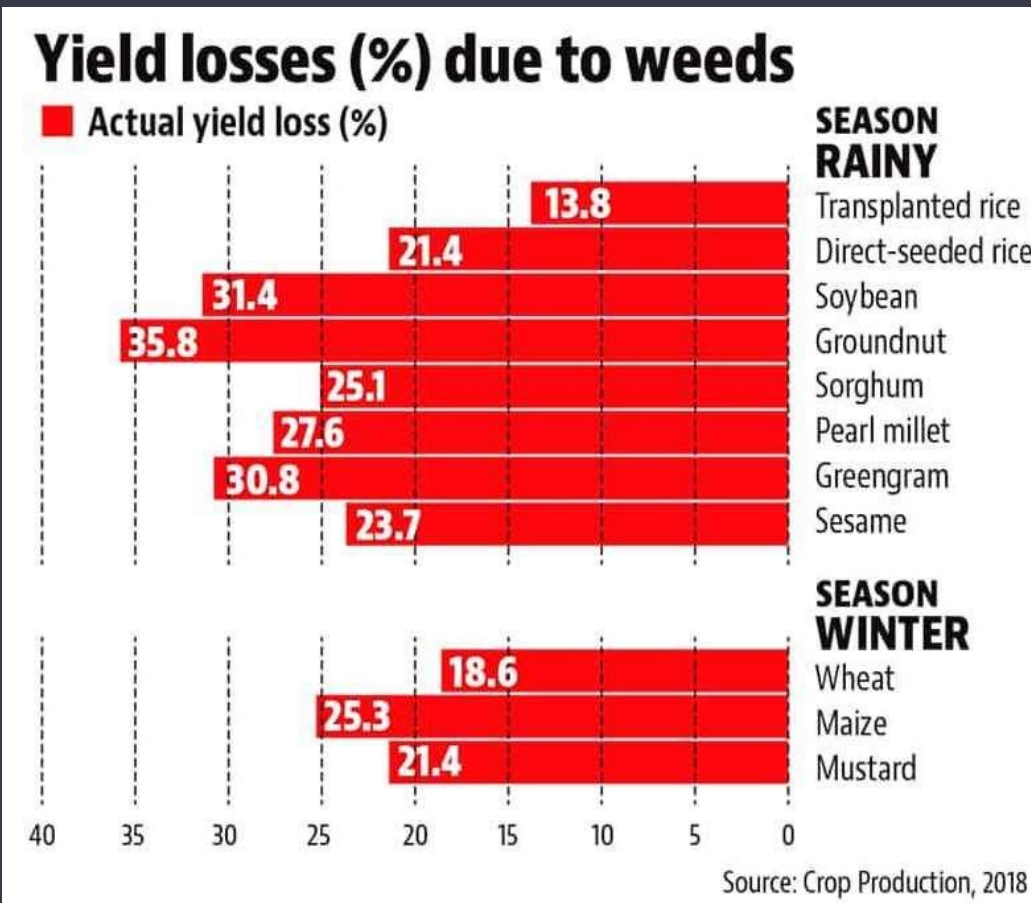
Its High time!

A water survey was conducted in 4 locations in Karnataka which were rural(1), sub-urban(2), urban(3), and Industrial(4) regions.

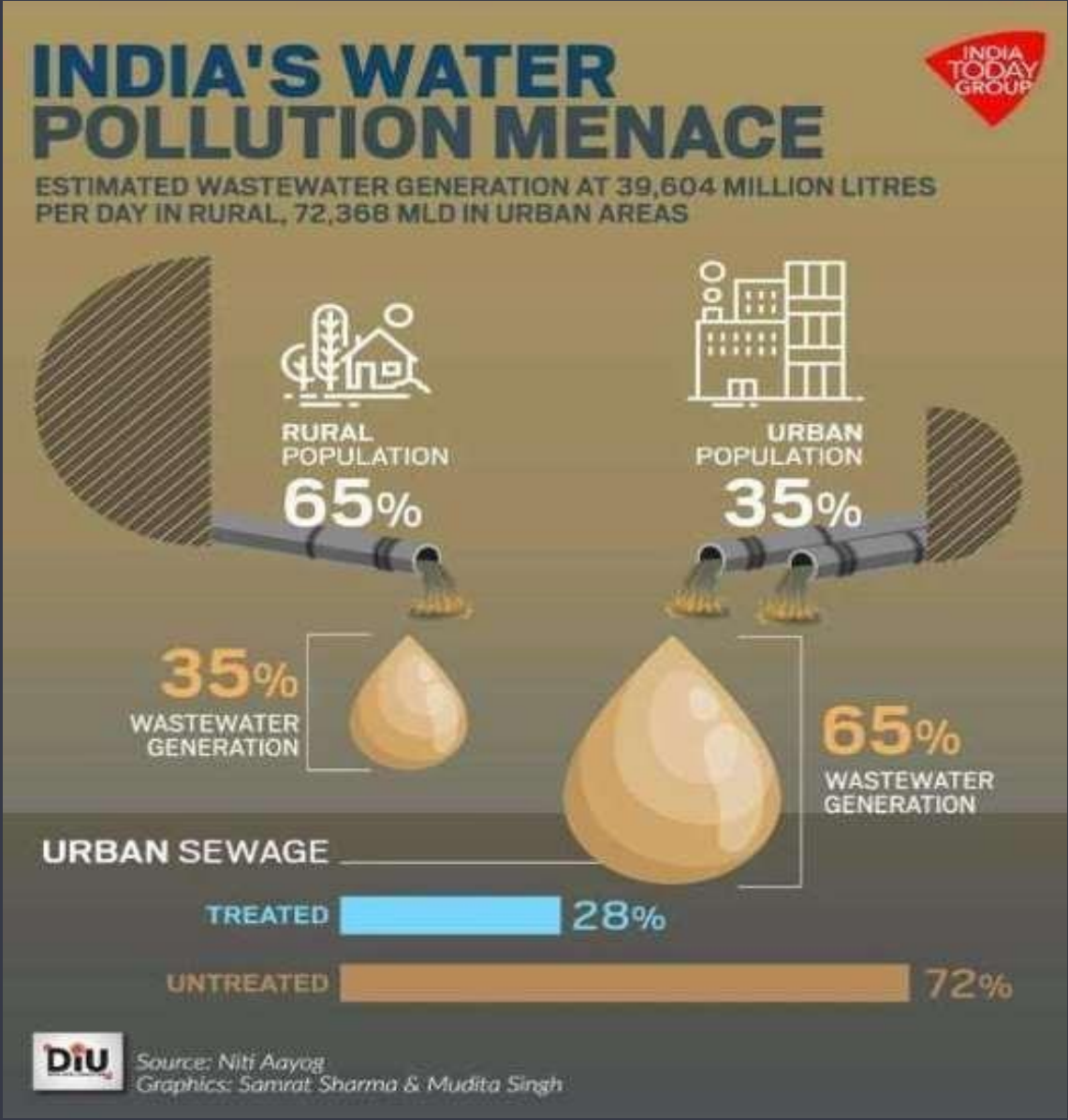
The results were shocking:

CoD and BoD(indication of purity) of the rural side were dangerously close to the

urban, which means chemicals are breaching agricultural land and groundwater table leading to ecosystem destruction.



Parameter	Location-1	Location-2	Location-3	Location-4
Temperature	34	30	32	32
pH	8.6	8.6	8.4	9.8
Turbidity	21.2	22	51	73.6
Conductivity (μScm^{-1})	400	409	426	472
TSS (mg/l)	108	102	110	118
Total alkalinity (mg/l)	64	115	105	124
Chlorides (mg/l)	225	116	150	240
COD (mg/l)	280	268	250	296
BOD (mg/l)	36	32	27	54
Oil and grease (mg/l)	8	12	8	18
Sulphide (mg/l)	24	28	54	70

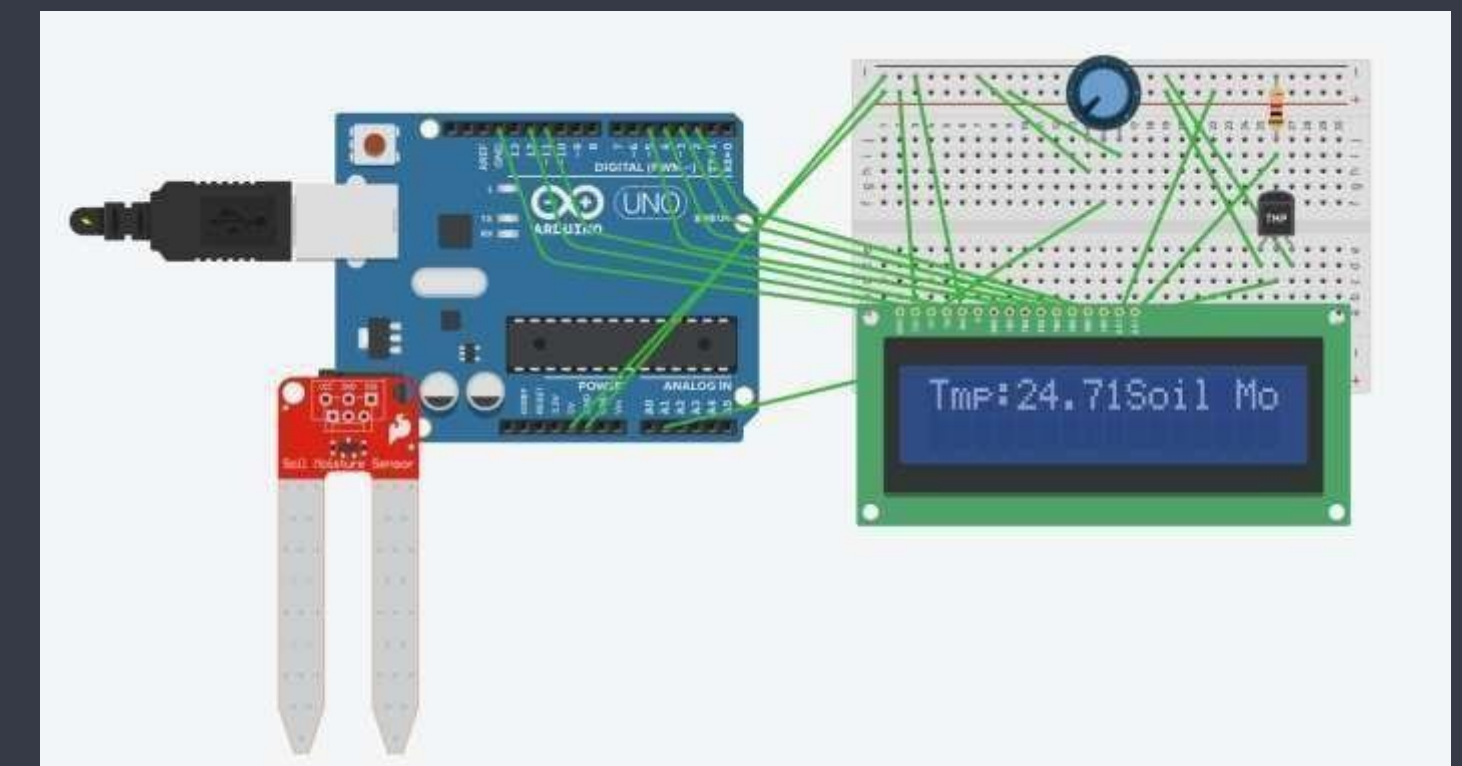


Solution

Our holistic approach is based on **bio-purification**.

We have created a prototype of an automated aerobic tank:

- Regulated by a microcontroller
- Integrated with the combination of different algae which purifies water.



Conceptual simulation

Polyethylene Tanks

- Primary tank holds effluent water and algae.
- Secondary tank stores filtered water.

01



Prototype

02

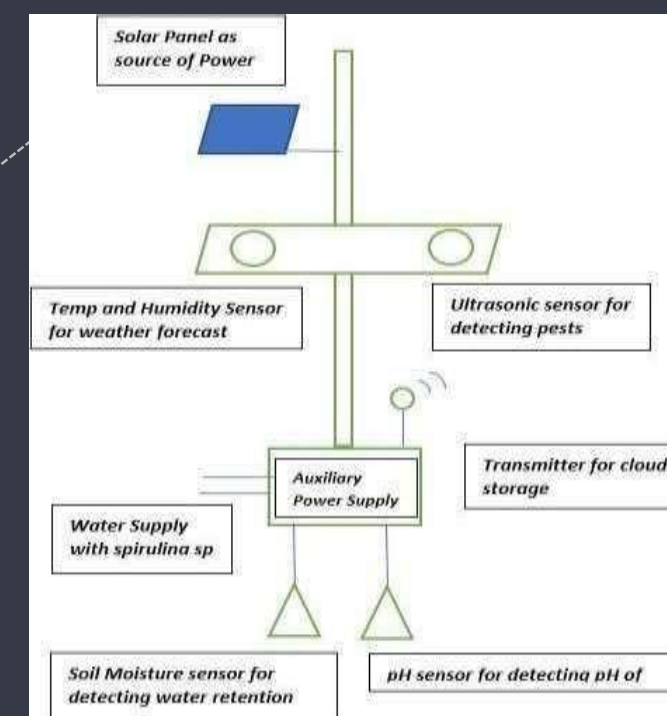
Recombinational algae

The USP of our product which filters the water by absorbing chemicals (biosorption)

Microcontroller

For automation and less human intervention, we have set up a smart system

03



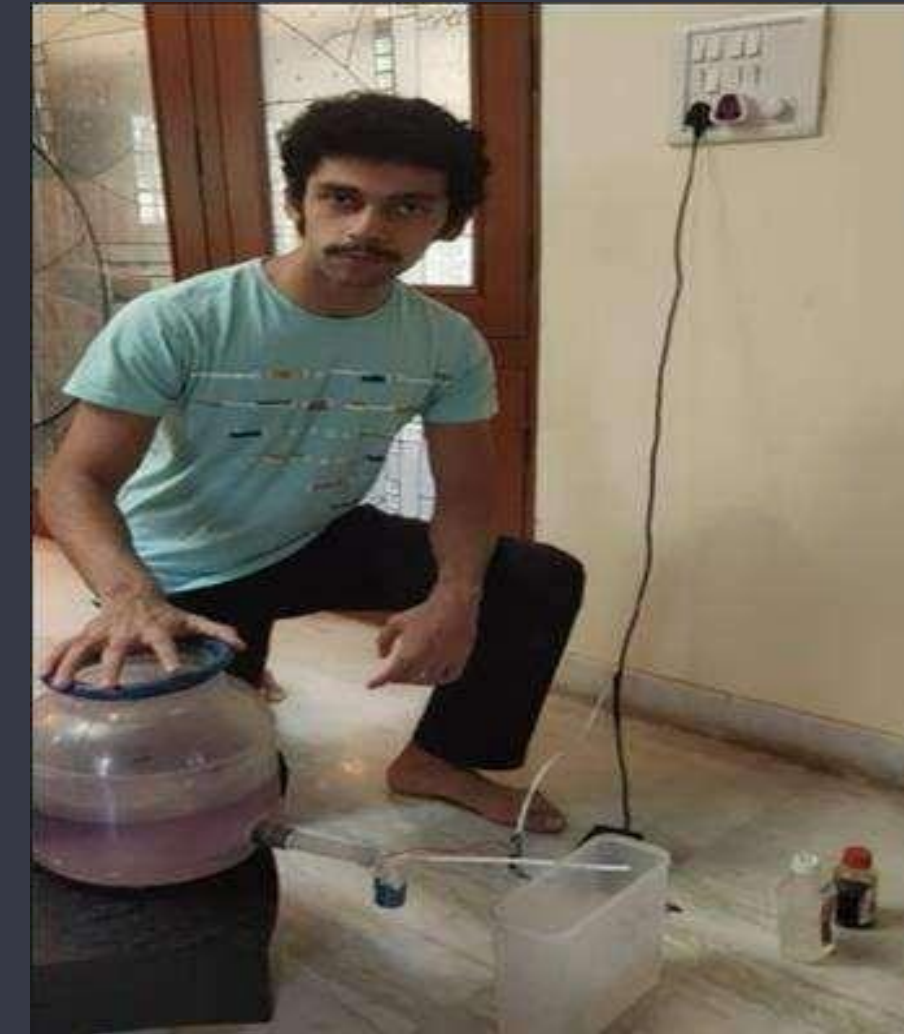
04

Sensors

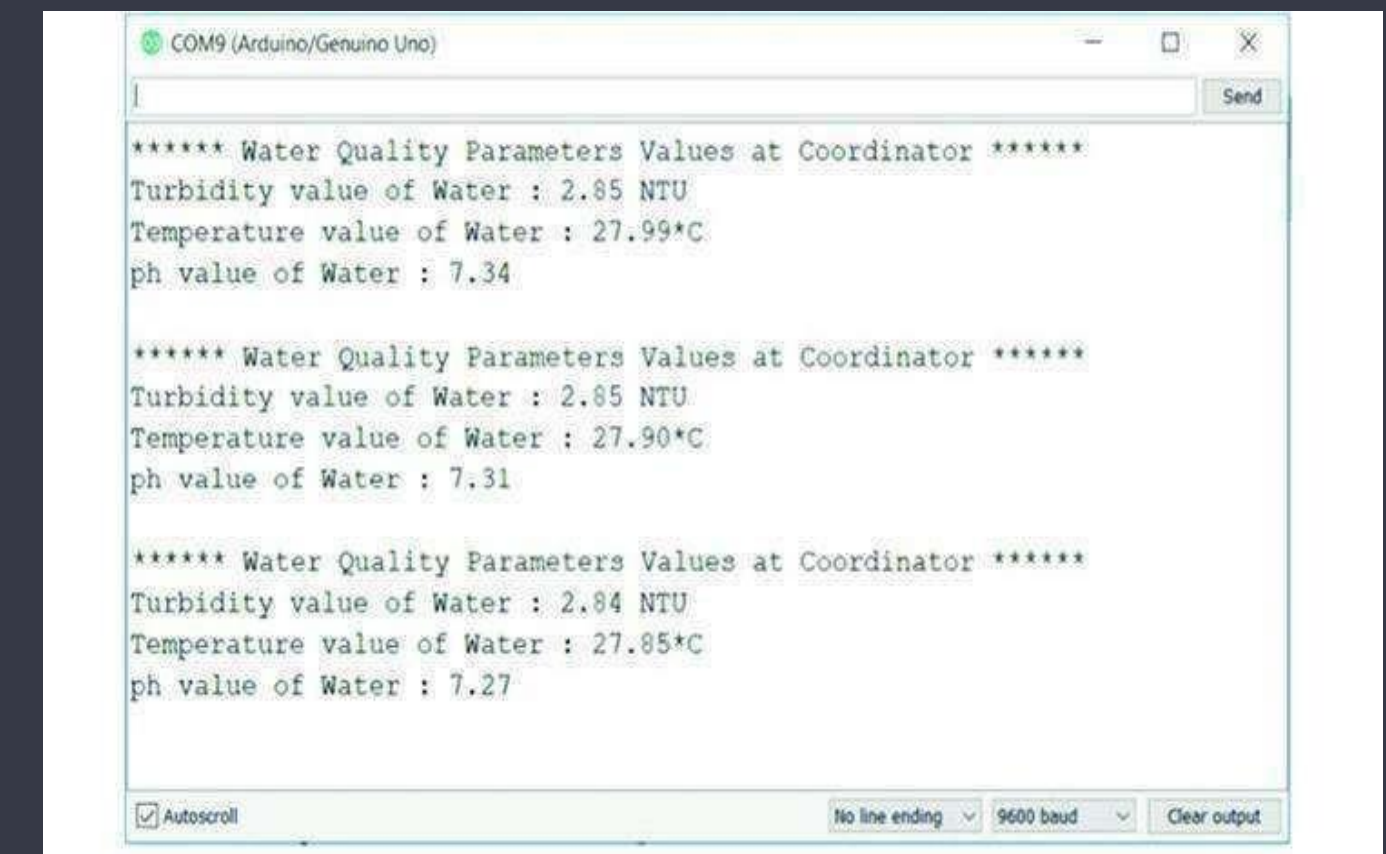
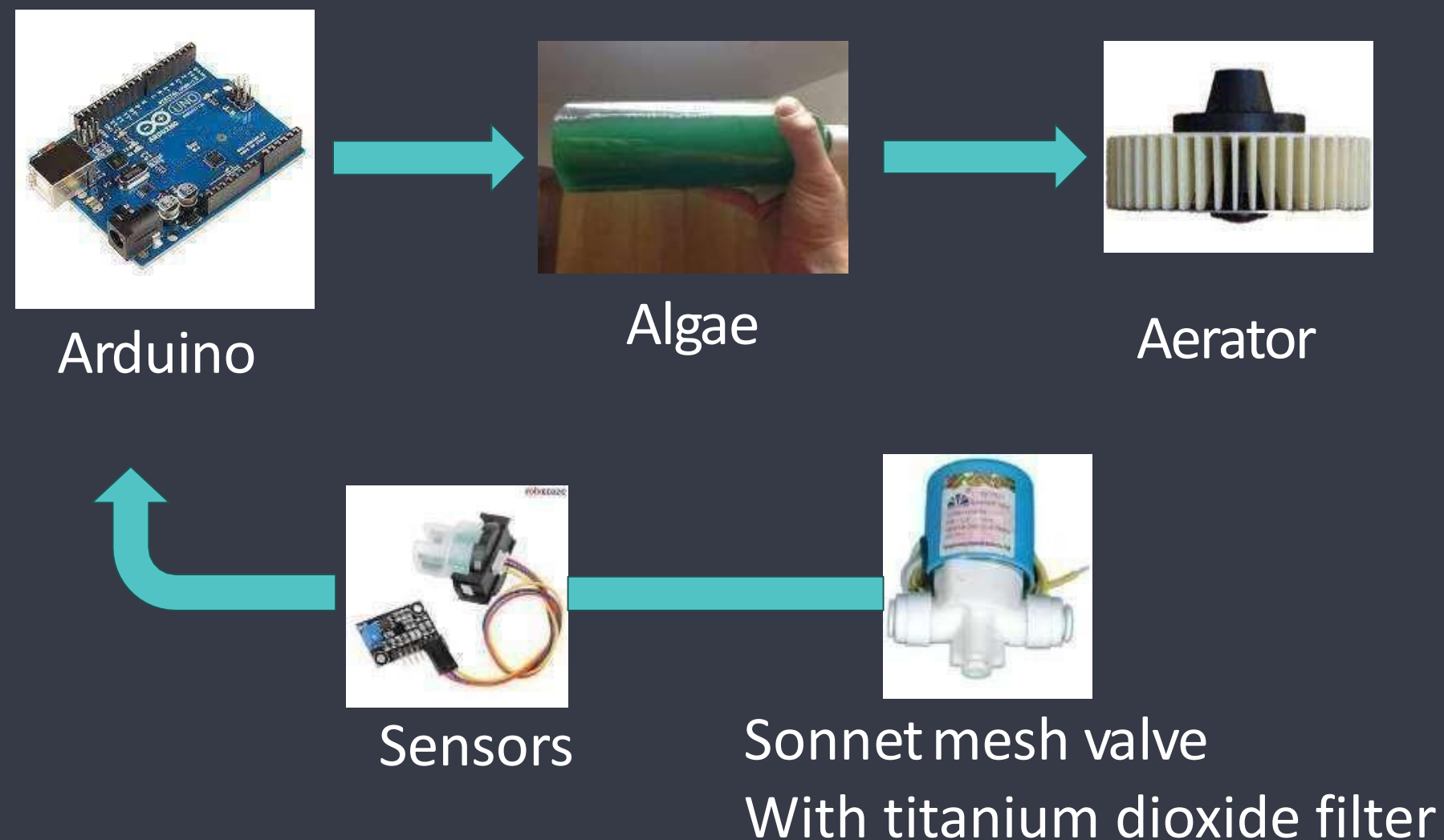
humidity pH, temperature and soil moisture sensors sends microclimate data to controller which will send require message for user

Methodology

- Once the primary tank has reached its capacity, algae is added and the tank undergoes aeration to initiate the process of biosorption, after a stipulated time all the impurities are absorbed by the algae
- The clean water is then passed through a filter into the secondary tank which is ready for usage.
- The sensors continuously monitor micro-climate of crops which is specific for each crop.
- Once the sensors read the soil requirement it releases water and nutrients to the soil for the crops.



Output



Working



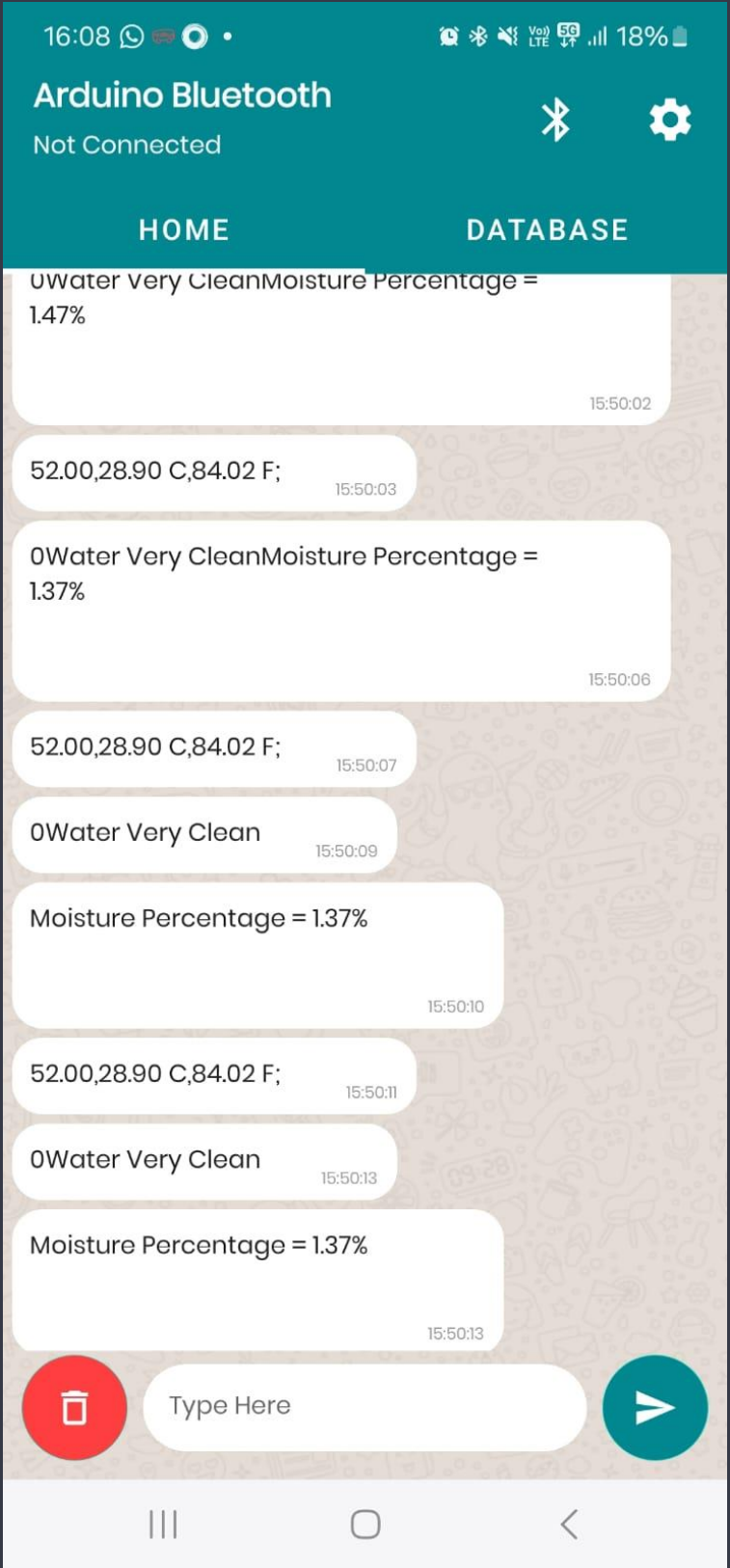
Stage 1
Maturation



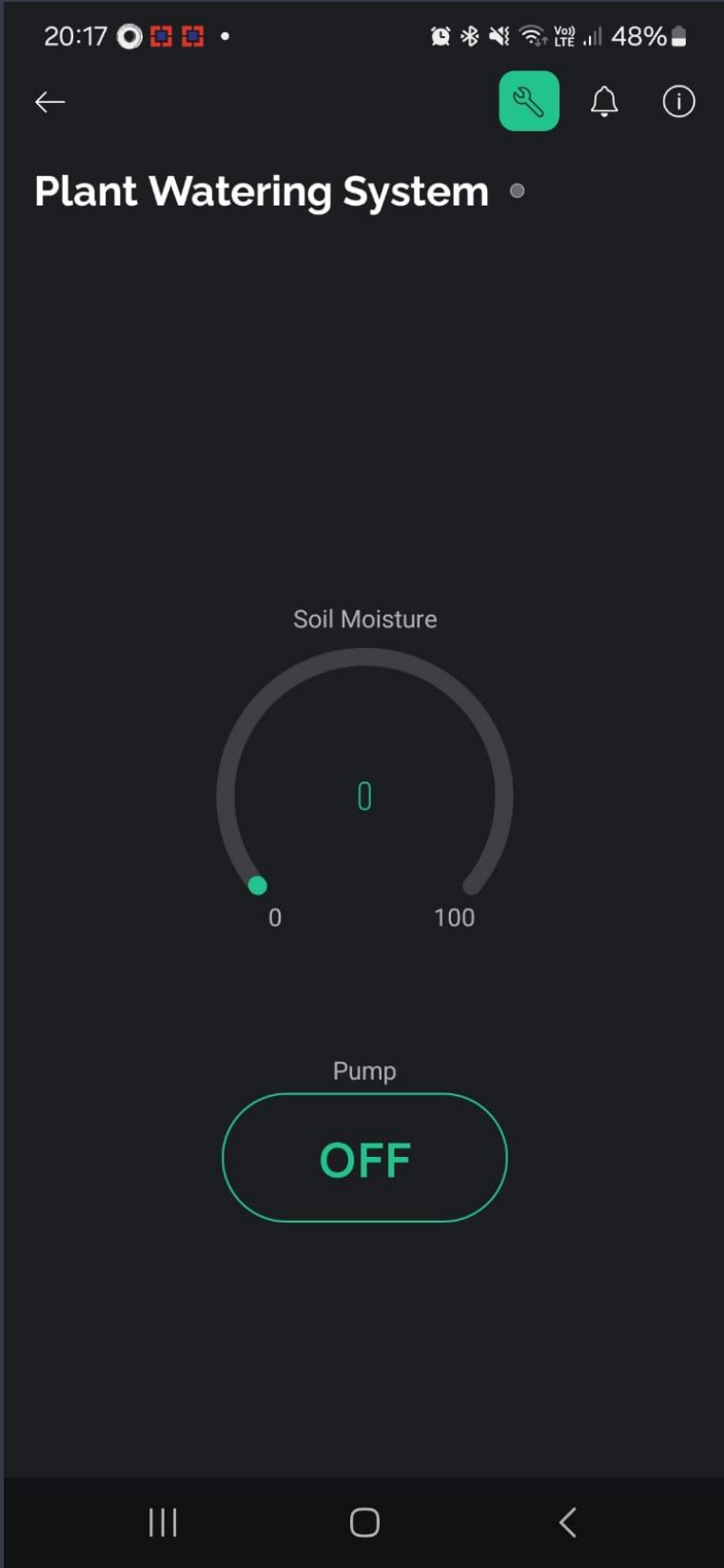
Stage 2
Protein
biosynthesis



Stage 3
Filtration
and data
tracking



App1



Beta App
in progress

Market Opportunity

Target Market

Primary: (B2B)Textileand Petrochemical Industries
Secondary: (B2C) Semi-medium to large farmers

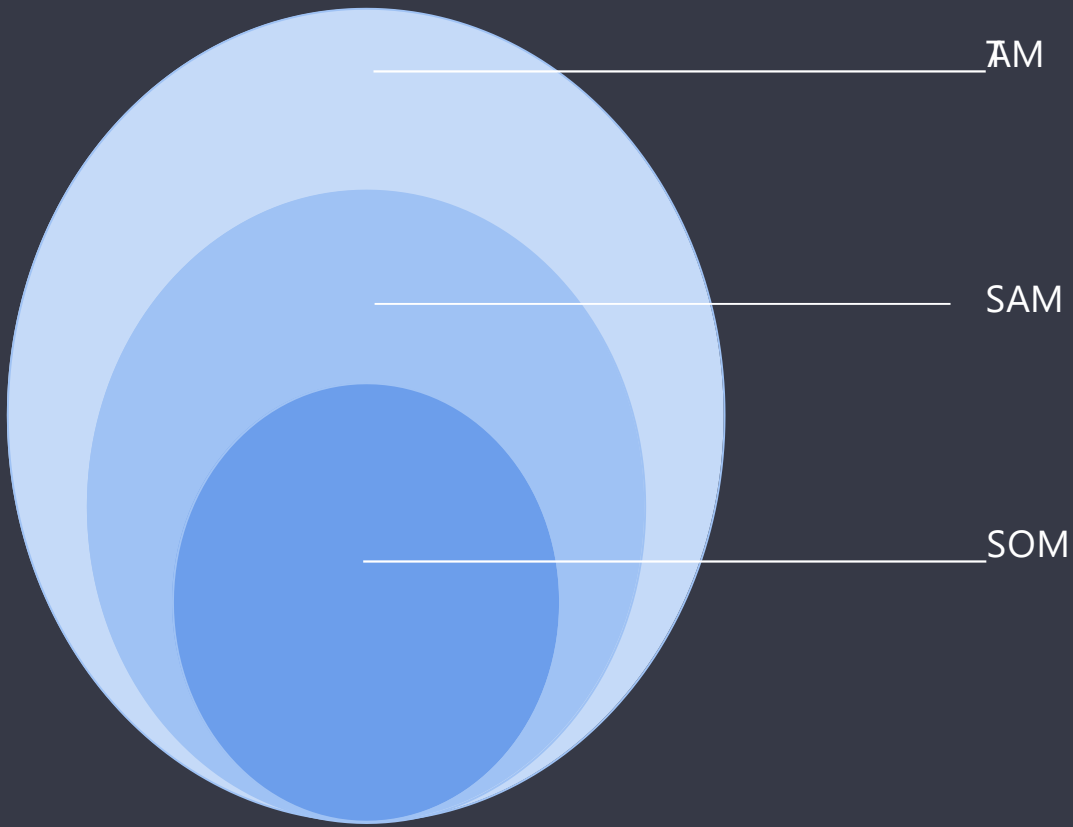
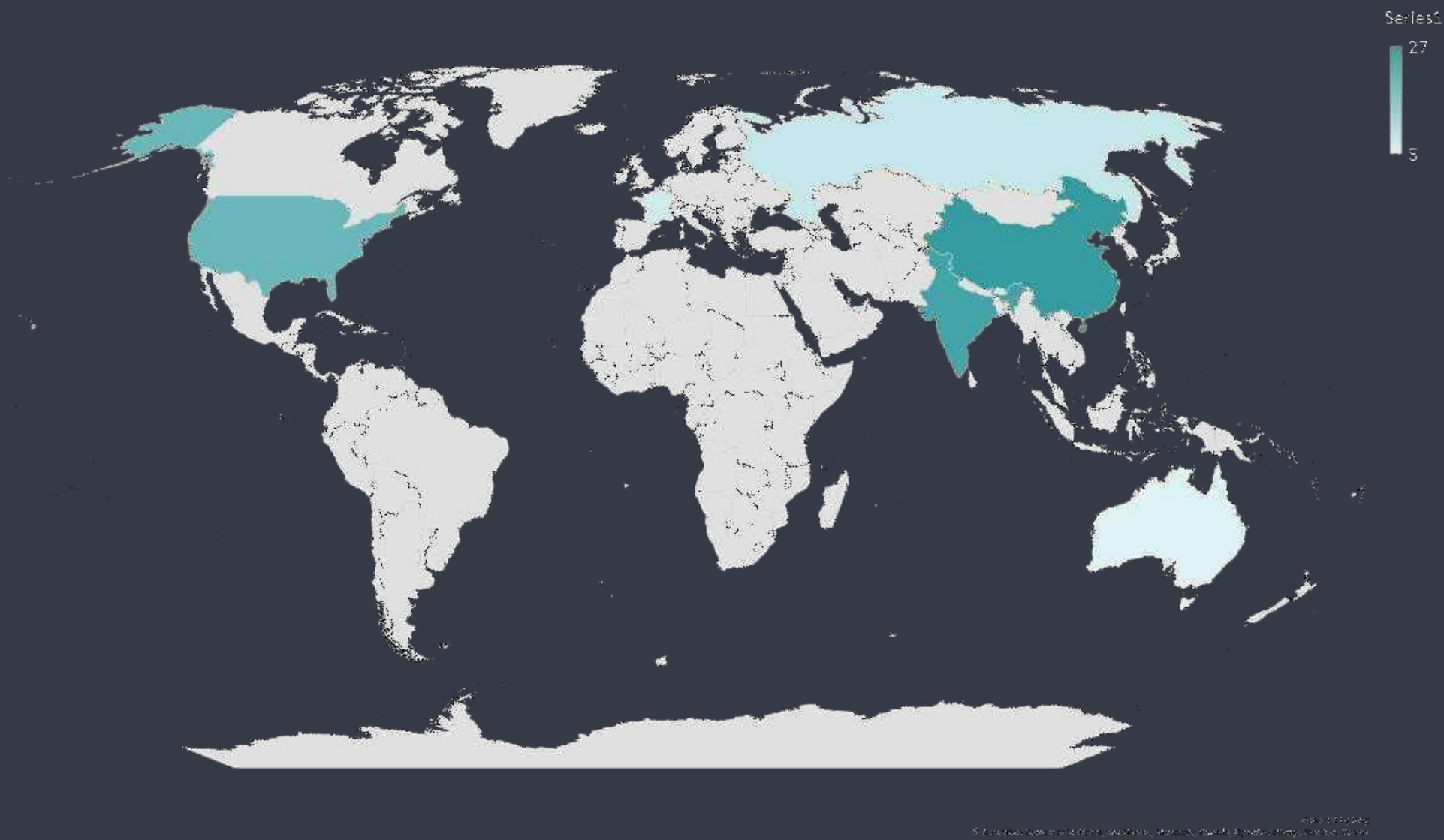
Growth of market annually

Industry	Agriculture
4.2%	3.3%

Market Share

Our goal is to capture 10 percent of SAM
which is 200 crore INR

World Distribution

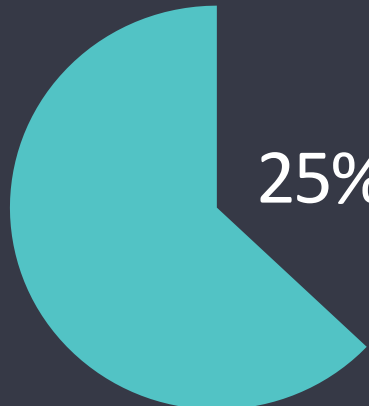


20,000 Crore INR
Across the globe

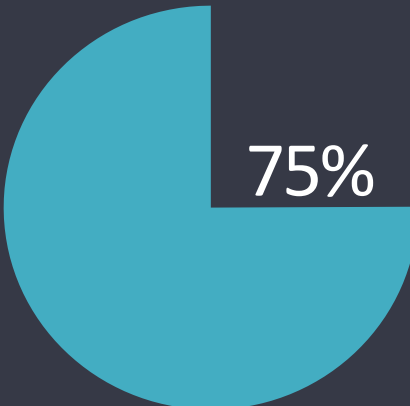
2,000 crore INR
For Indian Industries

200 crore INR
From Deccan region

Differentiator S.W.O.T Analysis



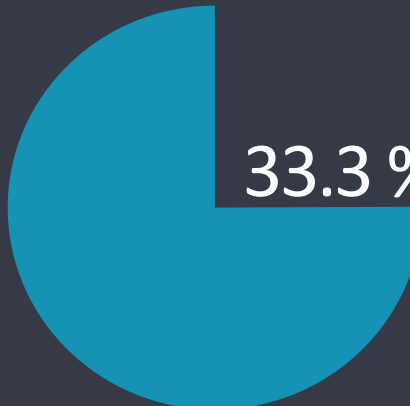
Reduction in dependence
on resources



Increase in health and
employability



Water saving



Increase in yeild

Strengths/USP

- Customized Filtration and analysis to cater to different industries
- Low Power and Low wastage
- Smart water, fertilizer, and pesticide allocation
- Eco Friendly and Sustainable

Weakness

- Adoption requires extensive marketing
- Process is slightly time-consuming

Opportunity

- Caters a huge market of 30.9 Billion USD or 20,000 Crore INR
- Paves the way to open algal farms and establish cosmetic products

Threats

Suez and BioRock company are currently working with similar products



FACTORS / COMPETITORS	PRICE Of filtrate	EFFICIENCY	POWER CONSUMPTION	FELEXIBILITY	SERVICE
KRISHI INSPIRO	750/-	8/10	2.5 kwatt/hour	Ratio of algae can be modified depending on industry	Subscription
SUEZ	2150/-	4/10	15 kwatt/hour	LIMITED	One time installment+ maintenance
BIO ROCK	1500/-	9/10	5 kwatt/hour	Fixed, no changes	Subscription

<https://platform.tracxn.com/a/d/company/Sj7skCyhATdfoB7th8ns8MPmb6S-LHyw5OS7mPGLqk/suez.com>

https://platform.tracxn.com/a/d/company/_j4eEilzwxO8CHmshT8HkgOpD8umpB7KNu3QPHkjN8U/bioroc#a:key-metrics

Razor blade Business Model

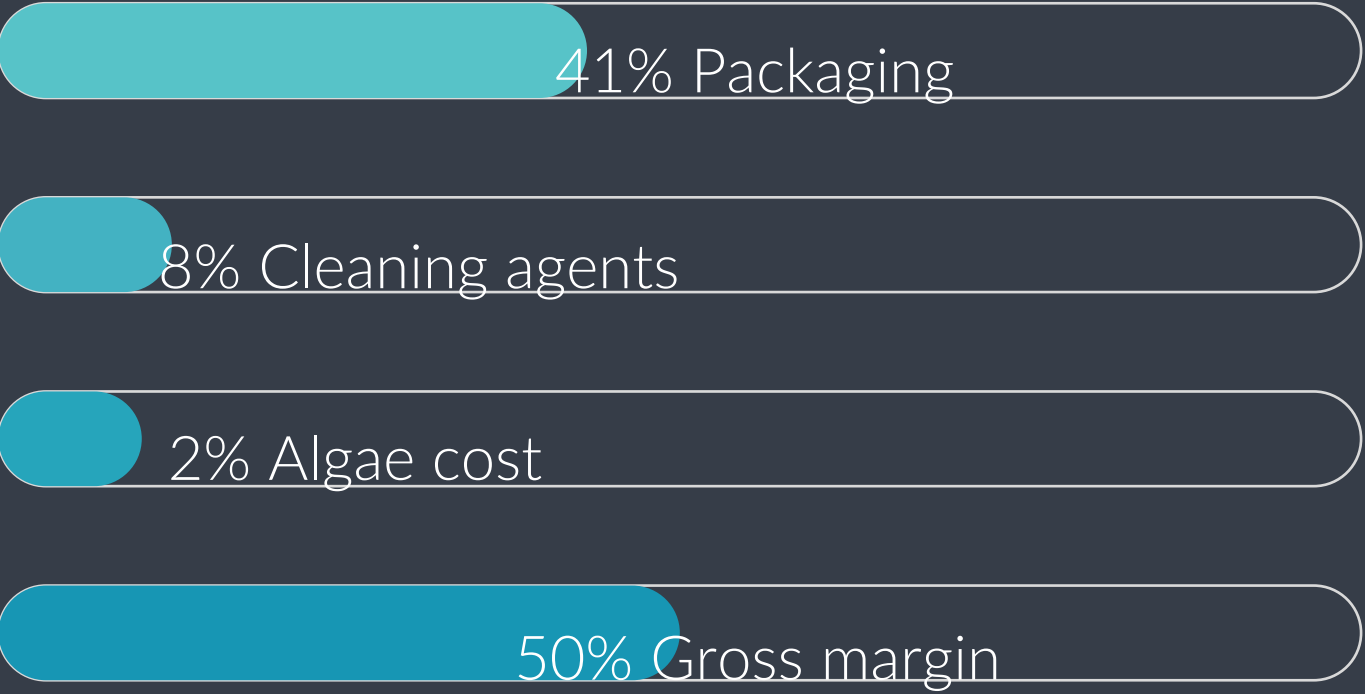
Nature of business: **B2B**
Target audience: **Petrochemical and Textile industries**
The average cost of product: **Rs 5500/-**

- Services:
- 1. Tank installation(razor)
 - 2. Algae subscription(blade/repeat orders)

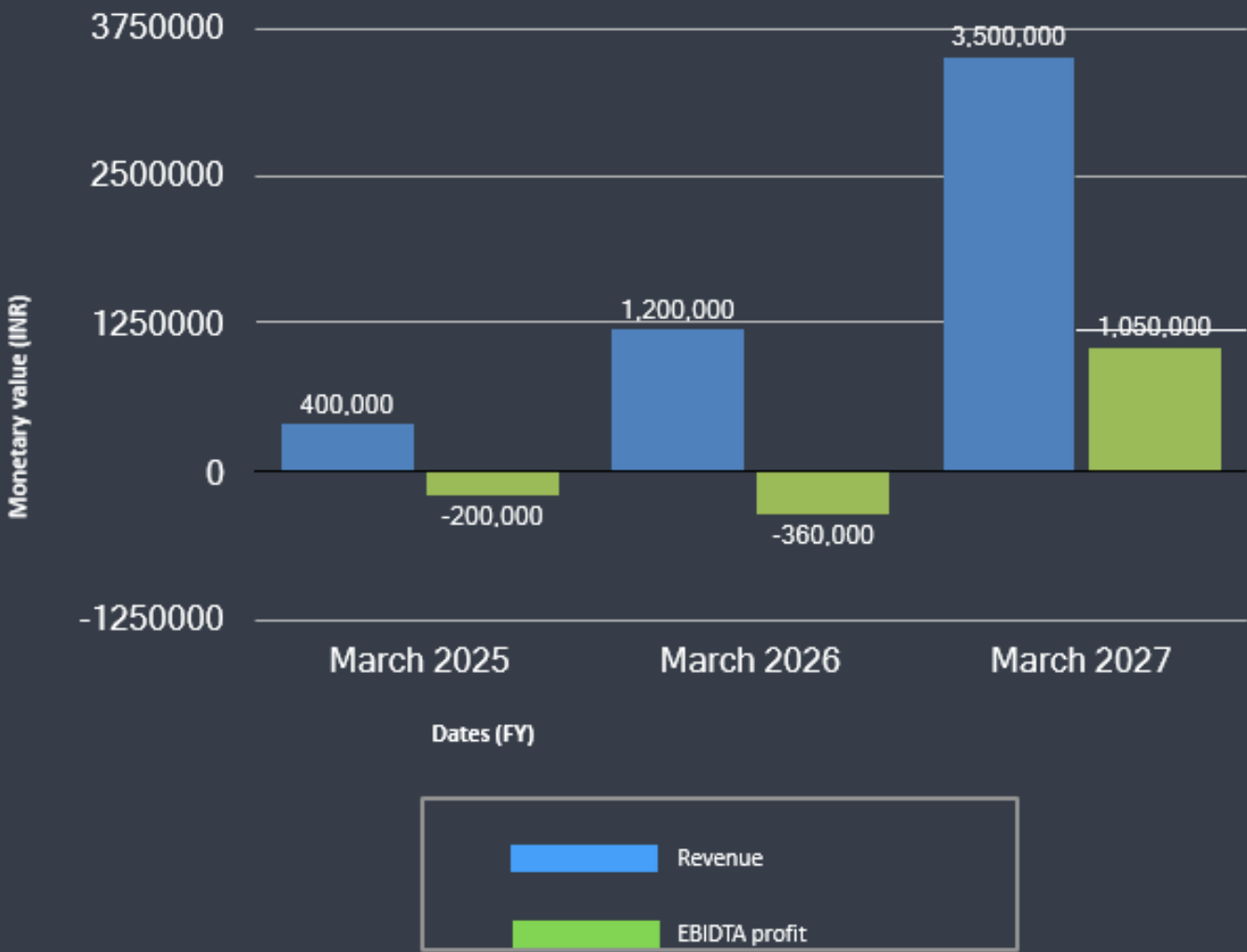
Overall running cost for full operation

Sc.no	Item	Year 1	Year 2	Year 3
1	Logistic cost	1,50,000	4,00,000	10,00,000
2	Raw material	3,00,000	9.00,000	15,00,000
3	Cost for office operation	1,00,000	1,50,000	2,00,000
4	Electrification and installation	2,00,000	2,00,000	2,00,000
6	Variable operation cost	1,00,000	2,00,000	4,00,000
6	Maintenance	50,000	80,000	1,50,000
7	Licence and Registration	2,00,000	2,00,000	2,00,000
8	R & D	10,00,000	15,00,000	25,00,000
9	1 Manager + 2 Supervisors	6,00,000	7,00,000	9,00,000
10	5 workers	9,00,000	10,00,000	12,00,000
Total	sum	36,00,000	53,30,000	82,50,000

Unit Economics



- Manufacturing Cost
- Tank cost: 60 Rs/kg
 - Sensors: 350 Rs
 - Microcontroller: 600 Rs
 - Mesh Valve: 150 Rs
 - Aerator: 350 Rs
- Algae cost: 400 Rs/kg
- Packaging cost: 50 Rs



Financial Projections

Bootstrap Investment - 1 Lakh INR

Anticipated growth - 10%yoy

Break-even point- 2.5 years

Gross margin: 50%.

Manufacturing machines: $3 \times 2,50,000 = 7,50,000$ INR

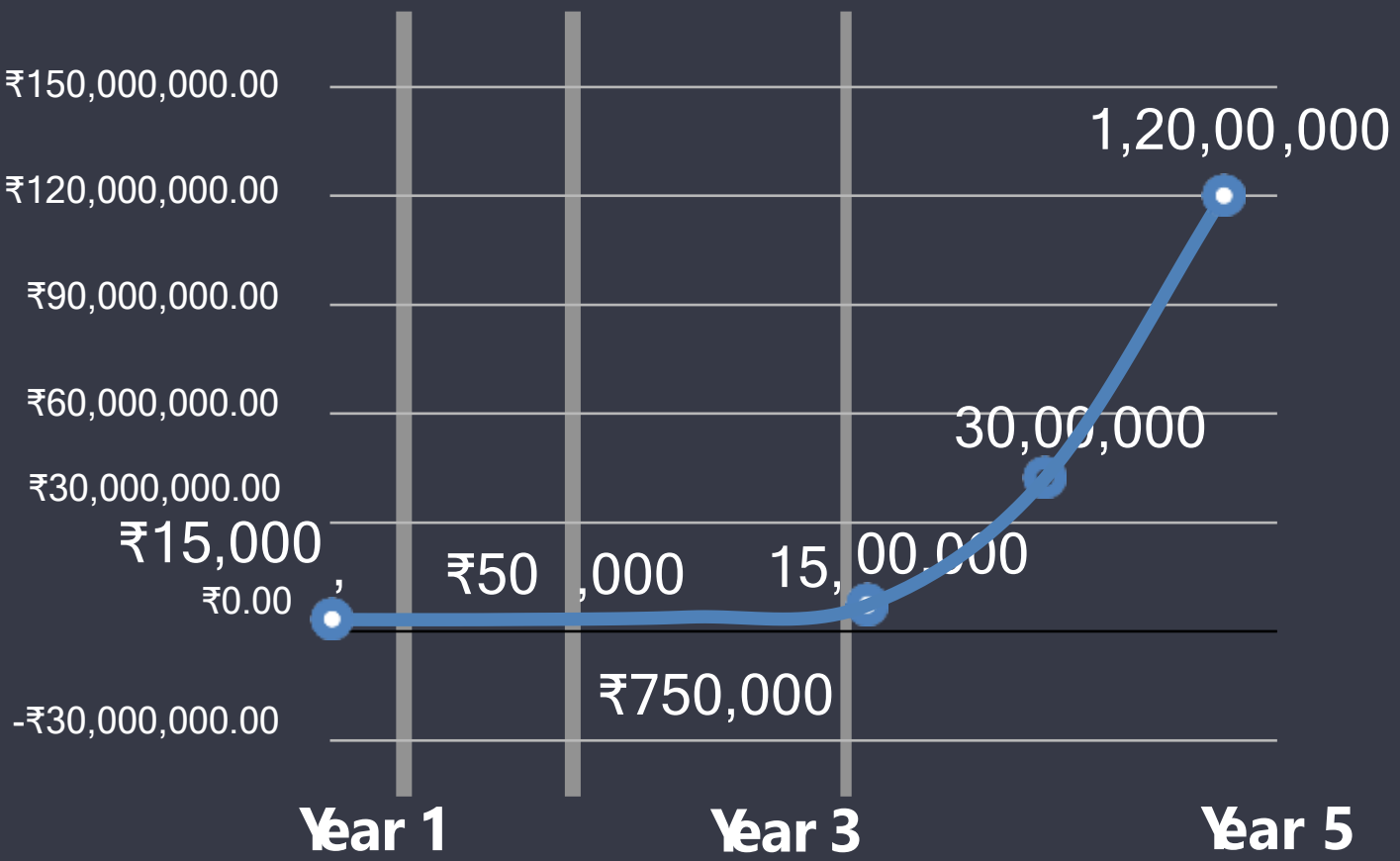
Sensors: $10 \times 1000 = 10,000$ INR

Bank: 10,000 INR

Inventory: 1,00,000 INR

Raw Material and automation: 2,00,000 INR

Miscellaneous- 1,00,000 INR



Gross Transactional Value (GTV) / or any other metric



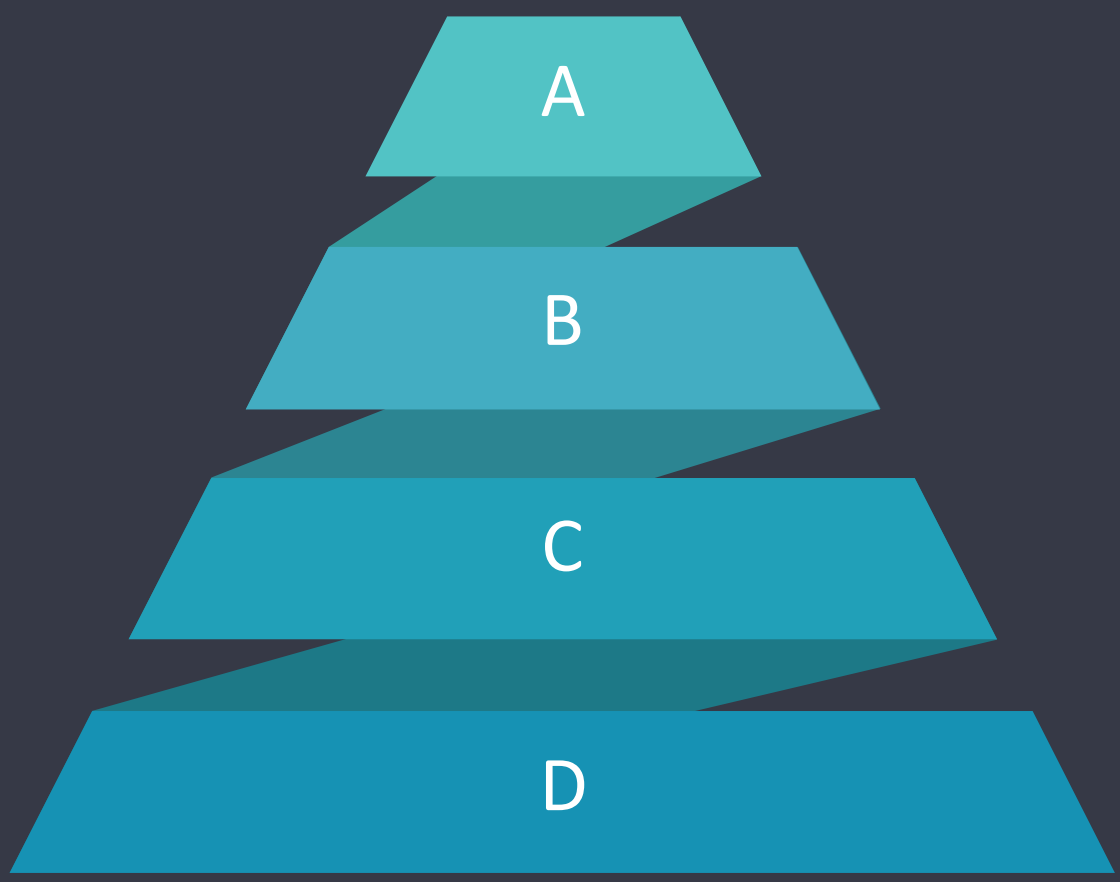
Razor Blade Subscription Model

• capture customers and obtain repeat rate



Marketing by social media

Organic growth



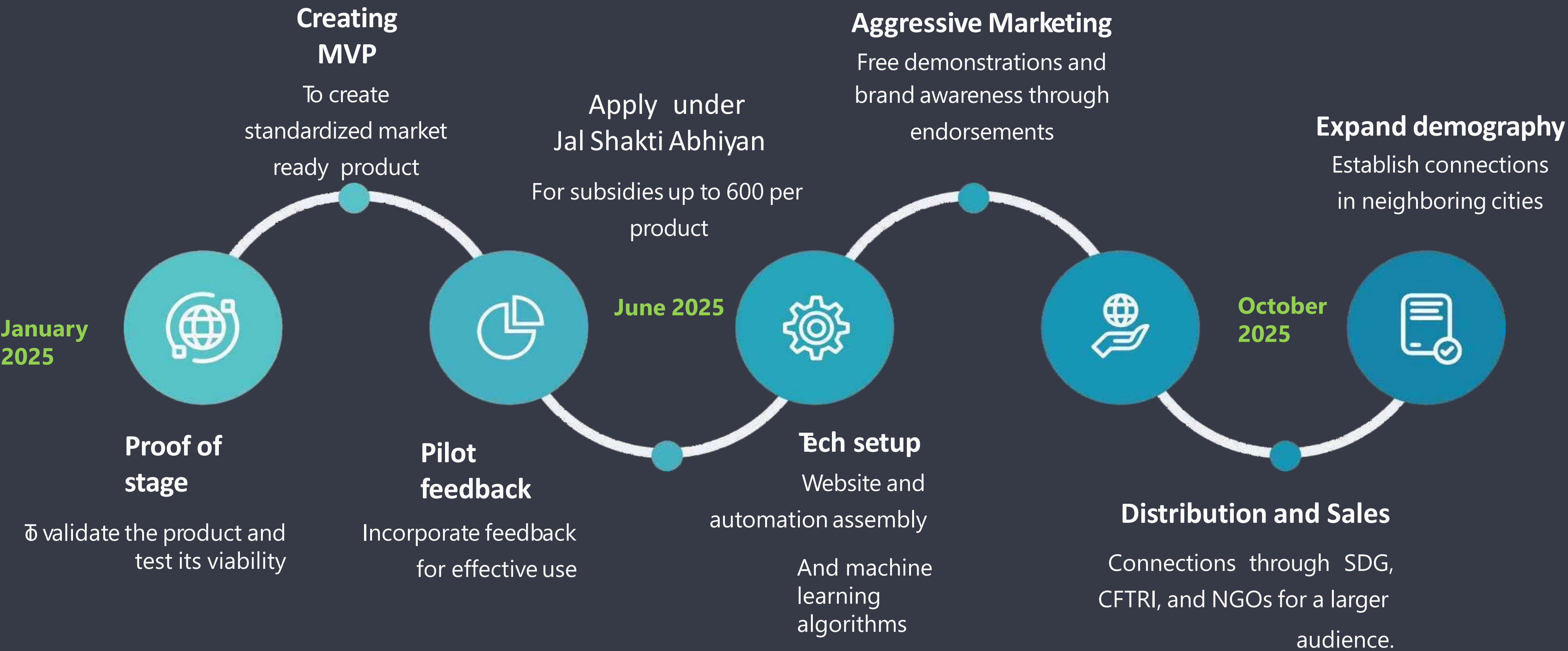
Create digital presence by website
Have social marketing in Instagram
Collaborate with eco friendly events



Capture all Market places
And obtain maximum review



Road Map



Collaboration

The team thanks the Department of plant cell biotechnology (PCBT), CSIR–CFTRI, Mysuru for providing spirulina culture (CFR/SP6) culture and providing resources



Achievements



The team has won B plan and technical competitions in IIT Madras, IIT Bombay Eureka, SIIB, IBS Pune.



References:

Our Website link: <https://willowy-cat-2473ab.netlify.app/>

My research IEEE research paper: (paste only in google)

<https://drive.google.com/drive/folders/1kwEsBmp44616KGcmPIGenhjckqEjxSLZ?usp=sharing>

www.ellenmacarthurfoundation.org

Wikipedia www.researchgate.net