



# PLANT FACTORY

technologies

DEVELOPMENT AND IMPLEMENTATION  
OF AGBIOTECH PROJECTS



### PROBLEM

- Emergence of technologies and markets that exert competitive pressure (e.g.: vertical farms; substances that question the feasibility of existing dietary supplements, drugs, herbs)
- Supply chain disruptions due to geopolitics
- Complexity of the logistics of fresh plants (e.g.: transaction costs in growing, harvesting and delivering herbs in mountainous areas; loss of useful properties during transportation)

### SOLVING

- Local cultivation in vertical farms gives a steady supply of green biomass and covers demand all year round
- Controlled environment, light spectrum and irrigation, as well as ultraviolet treatment give an increased content of bioactive substances (BAS) compared to wild plants
- New types of processing allow us to fix the useful properties of substances for long-term storage and logistics (lyophilic drying, acoustic freezing, etc.)

## ADDING VALUE

Step 1



**Just food**

Step 2



**Bioactive substances source**

Step 3



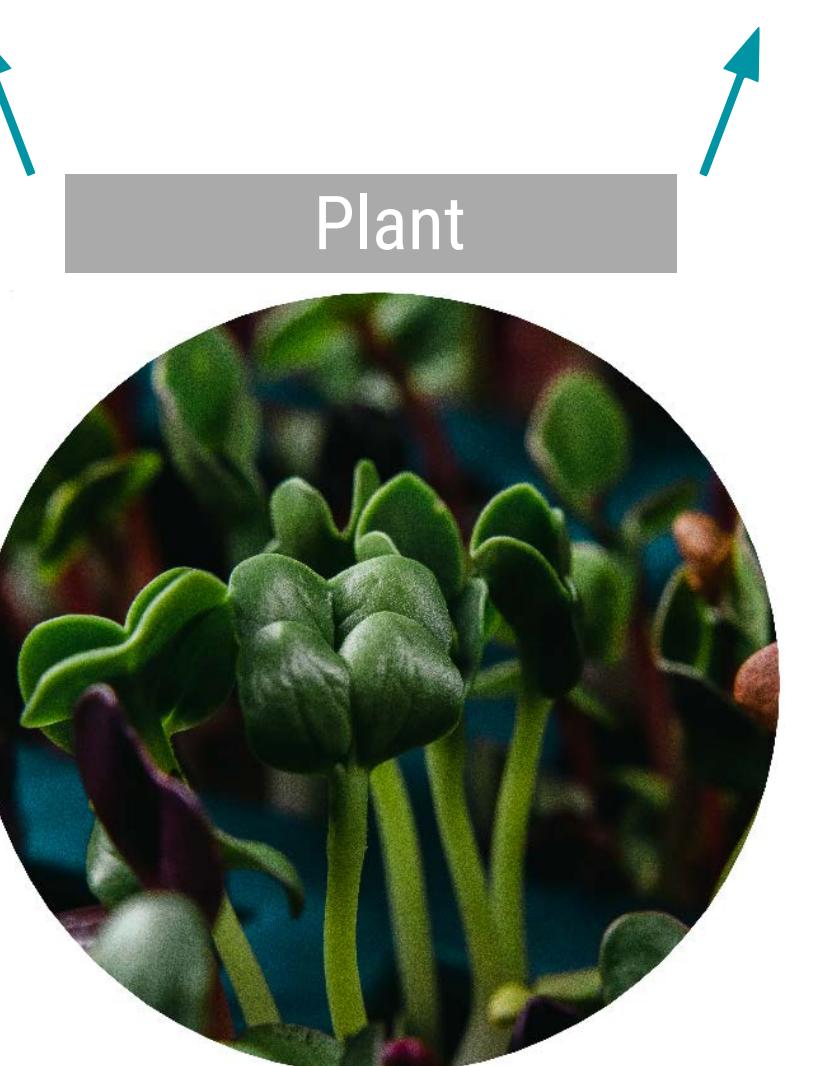
**Bioreactor for vaccine**

Step 4



**Seed material**

Currently on Step 2



Plant



## STEP 1: TYPES OF GROWING PLANTS



-  **Microgreens**
-  **Leafy greens**
-  **Berries**
-  **Medicinal crops**

### HIGH-QUALITY PRODUCTS WITH STRICT ADHERENCE TO CULTIVATION TECHNOLOGY

Crop	Growing cycle, days	Monthly output (kg/m <sup>2</sup> )	
		as end product	as raw material
<b>Microgreens</b>			
Mustard	5	19.0	22.2
Broccoli	7	21.7	27.0
Pea	7	23.0	28.1
Radish (Daicon)	3	22.4	27.5
Radish (Red Coral)	3	21.2	26.8
Radish (Sango)	3	22.0	28.0
Radish (China Rose)	3	22.6	28.5
Arugula Red	6	10.2	12.4
Kale (Red Russian)	7	10.4	12.6
Kale (Black Tuscany)	7	10.7	13.0
Cress (micro)	6	14.0	17.3
<b>Leafy greens</b>			
Salads (baby leaf)	15	7.5	-
Sorrel (baby leaf)	15	6.8	-
Sorrel (baby leaf)	15	5.6	-
Arugula (baby leaf)	15	7.5	-
<b>Berries</b>			
Strawberry (Evie-2)	180	4.0	-

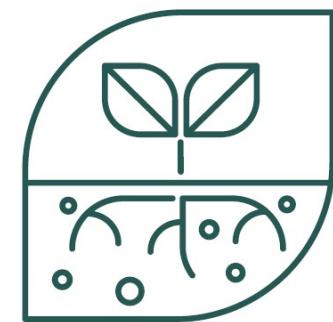
EFFICIENCY IS MORE  
THAN 2 TIMES  
HIGHER THAN IN  
HYDROPONIC  
SYSTEMS

VERTICAL FARMING'S  
WORLD AWARDS  
2021

FINALIST  
IN NOMINATION "BEST  
YIELD IMPROVEMENT"

## TECHNOLOGICAL ADVANTAGES OF OUR OWN DEVELOPMENTS IN VERTICAL FARMING

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### HIGH-PRESSURE AEROPONICS

Nutrition evenly delivered directly to the roots in the spray form



### ADAPTIVE LIGHT

In-house built phyto lights allow to adjust the spectrum and intensity



### FLOW CHARTS

Optimal growing parameters for each crop according to a specific purpose



### MODULAR SYSTEM

Allows to scale production and optimize the use of space



### DIGITAL MONITORING SYSTEM

Allows to deeply understand the biology of processes during plant growth and optimize them

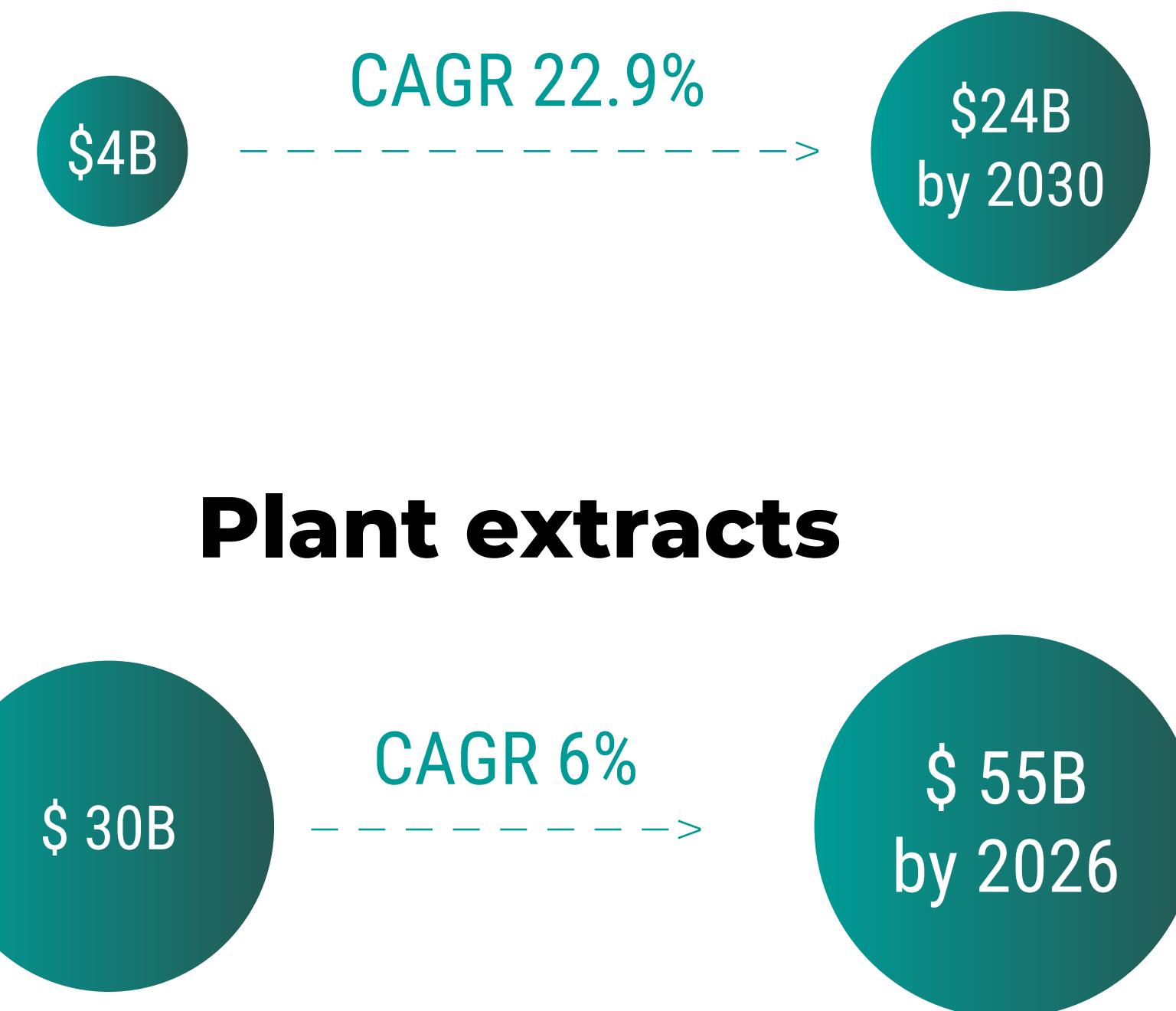


### SPECIAL PLANTING MATERIALS

Substrates are selected to achieve high planting density of various crops

Please note that all technical solutions are the company's own developments, which allows not only not to depend on suppliers, but also to increase technological dominance

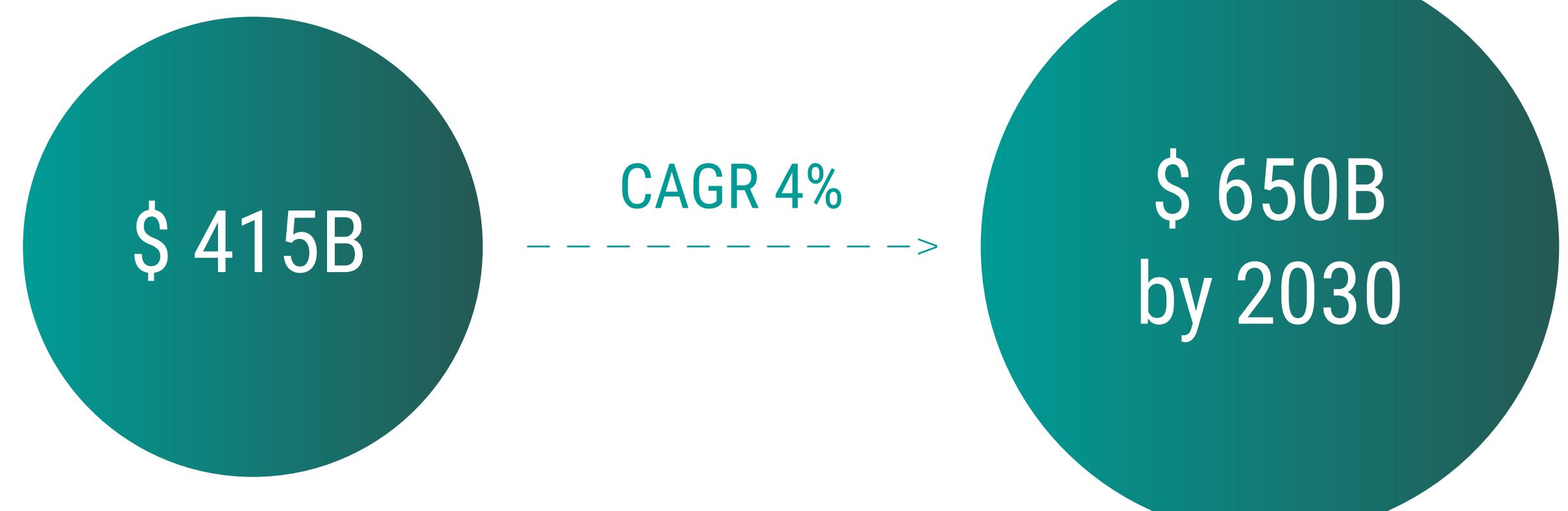
### Vertical Farming



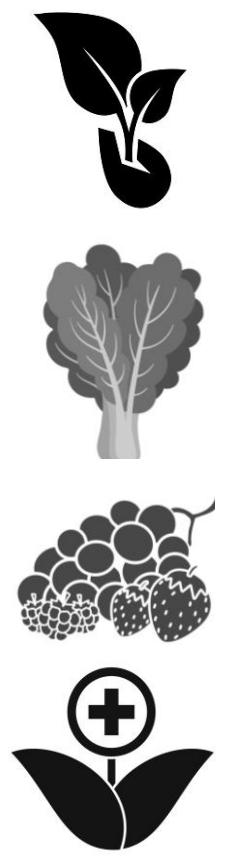
### Plant extracts



### Nutraceuticals



The Nutraceuticals market needs raw materials based on extracts. Thus, more companies are going through VF to reduce CapEx and hedge against logistical risks.



Processing



Raw material



Functional food



BAS



Drug



Cosmetics



We have developed a methodology of careful plants processing, which allows to save a huge amount of fresh plants' valuable properties for further transportation

25 mg of Sulforaphane by Merck cost €339

### SULFORAPHANE



antioxidant

antimicrobial

anticancer

anti-inflammatory

anti-aging

neuroprotective

anti-diabetic

brussel sprouts, kale, cauliflower, broccoli, cabbage, kohlrabi, cress salad, radish

click here to learn more ↑

- wide applicability and high demand
- made mostly from field-grown broccoli
- BUT(!) microgreens contain 354 times more
- and PFT is the leader in the yield of microgreens

SFN's market share in pharma and nutraceuticals:  
steadily growing, but still in its early days



CAGR OF 5.9%



\*this is just one of the first cases in our pipeline

## CONTESTANTS [CLICKABLE SLIDE]

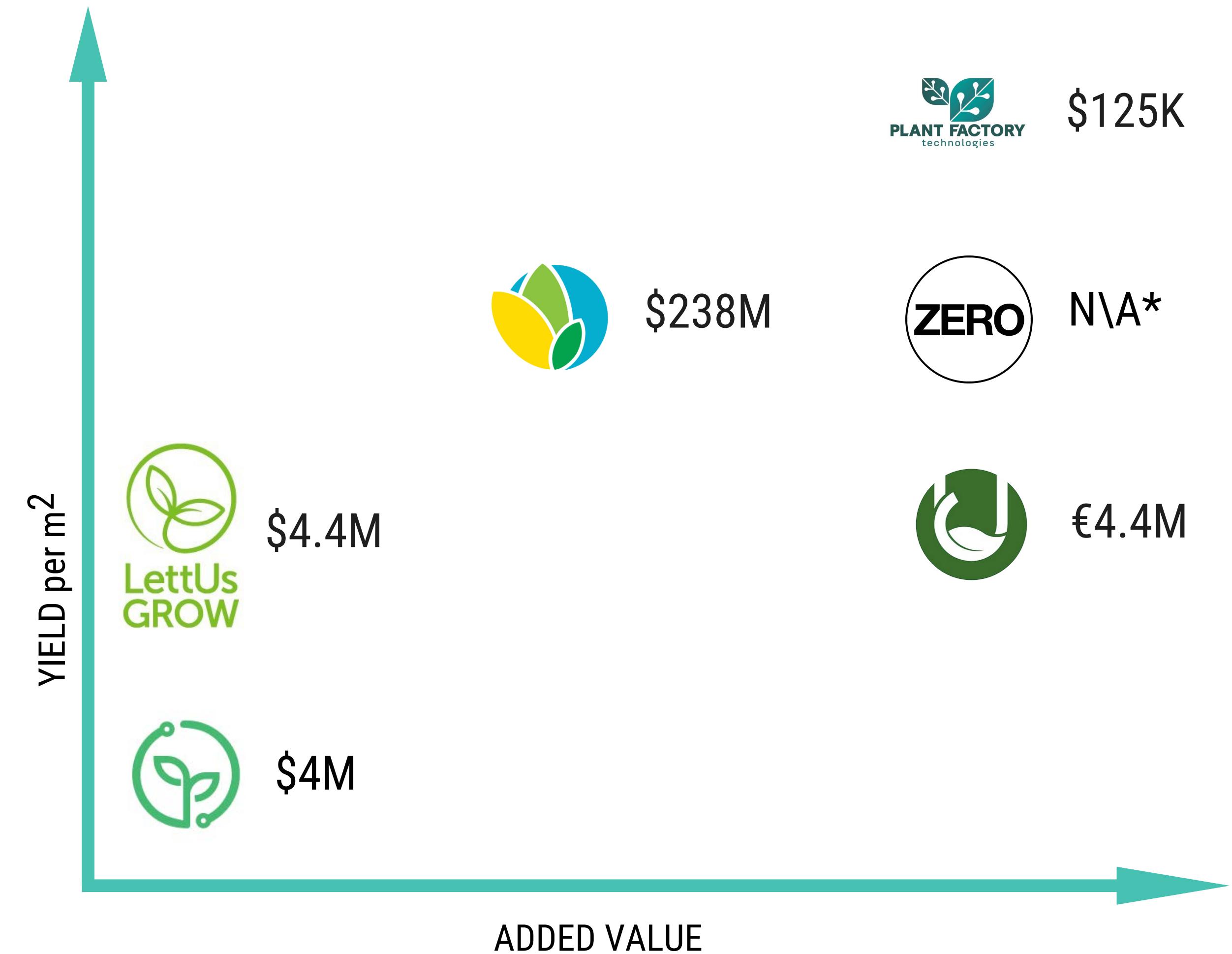
AgBioTech references



 **culti pharm**



↓ click on digits or logo ↑



### Assets:

- ✓ Experimental-production site
- ✓ Leader in microgreen yields
- ✓ Unique design of aeroponic growing system
- ✓ Formed flow charts for each plant and specific task
- ✓ Developments with scientific institutions for adding value
- ✓ Advanced processing methodology saving properties

### **2016–2017**

- Developing cultivation technology
- Launching laboratory
- 1→2 people

### **2018–2019**

- Upgrading and scaling key systems and equipment
- 1st commercial production
- Business Model (BM): supplying fresh greens to HoReCa
- 2→5 people
- Partners: Svetotehnika (LED lights), Alfa-Hydro (equipment)

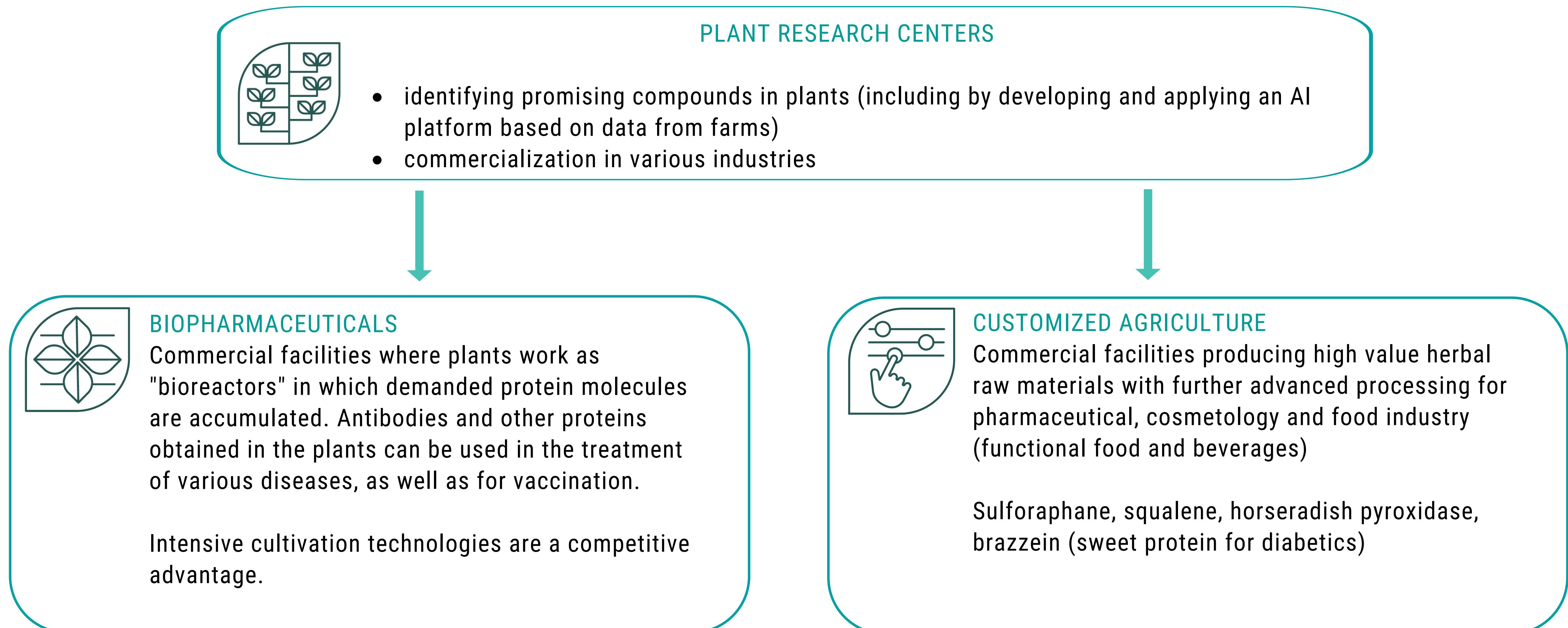
### **2020–1H2021**

- Developing of automation and digitalization
- 4 commercial production facilities in portfolio
- COVID-19→BM pivot: B2B consulting (farms construction)
- 5→8 people (front office)
- Building own Research and Production site
- + Partners: Research Center of the Russian Academy of Sciences (IT, automation, robotization)

### **2H2021–2022**

- Finalist of VFWA '21 in nomination "Best Yield Improvement"→ receiving cooperation requests from Singapore, India, USA, Switzerland, etc and finally have chosen Finland as 1st step
- Own test-production facility launched
- Confirmed R&D results for processing of greens to rare extracts (multiplying additional value)→ BM pivot: embedding to production chains (VF+Processing)
- Opened a company in Finland
- Initiated joint contract for the development of functional cosmetics with New Organics (subsidiary of L'Oréal) for €24M in 1st phase (on pause from February 2022 due to geopolitical tensions)
- + Partners: Polytech University, New Organics OY (biotech direction)

## FUTURE COMPANY STRUCTURE

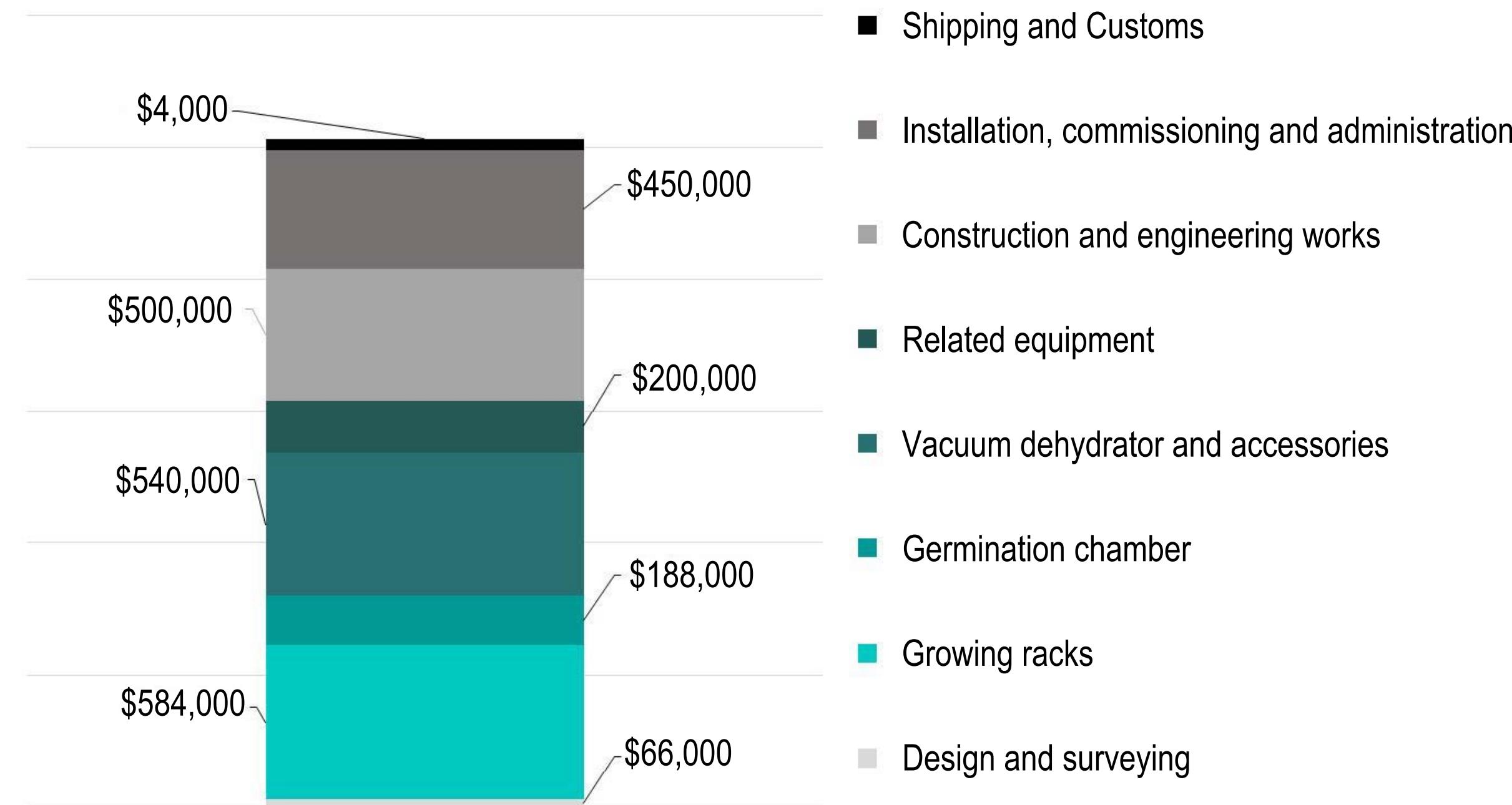




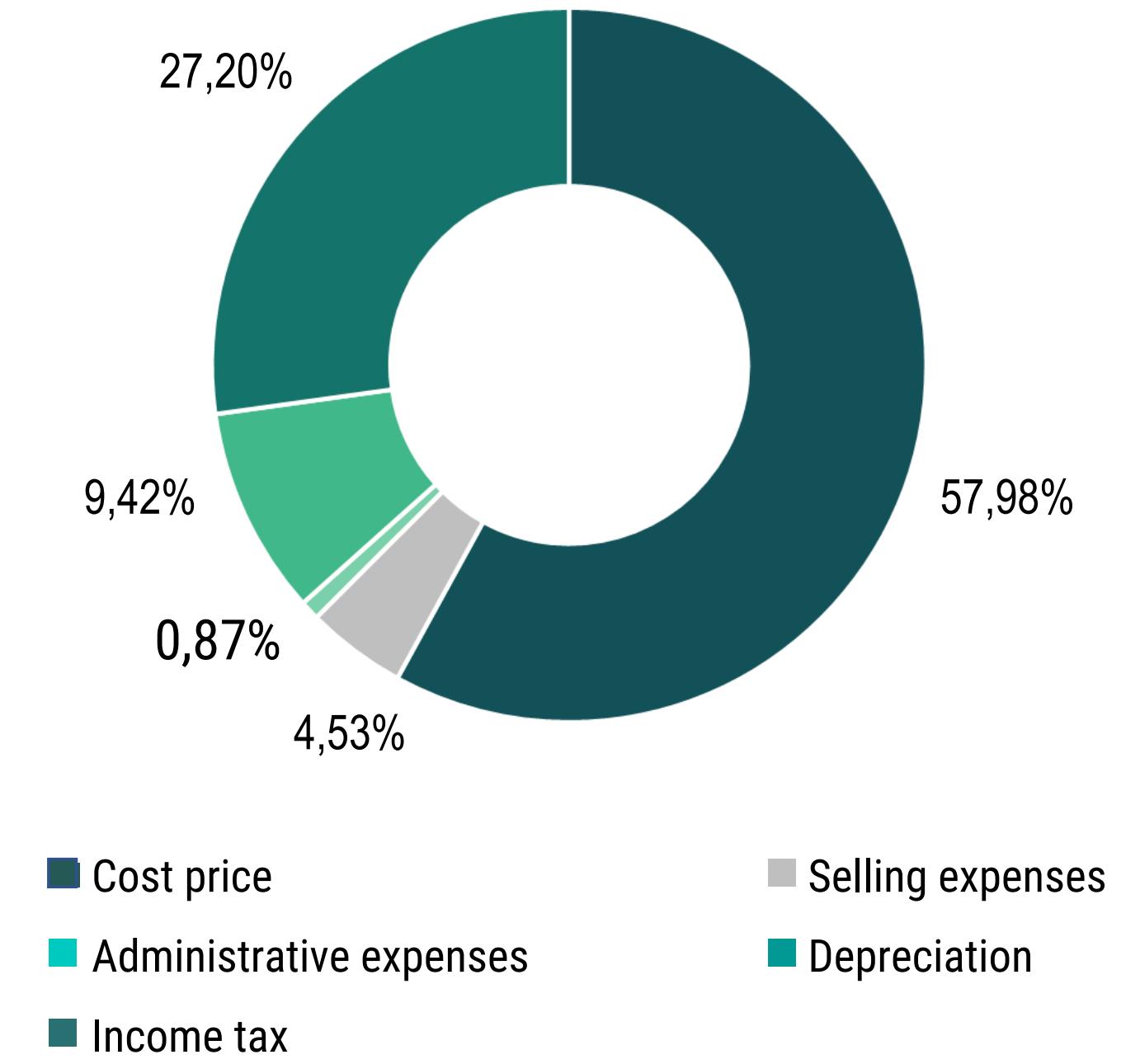
KEY PROJECT ASSUMPTIONS		RATIOS	UM	VALUE
Forecast period	102 months	Required volume of investment	\$	2,532,000
Estimated construction completion date	5 months	Projected total revenue	\$	66,120,000
Discount rate	23% annual	Projected net profit	\$	34,700,000
Average depreciation period of fixed assets	8 years	Net Present Value (NPV)	\$	13,420,000
Income tax rate	20%	Discounted Payback Period (DPP)	m.	14
Consumer Price Index (CPI)	4,4% annual	Payback period (PP)	m.	13
Producer Price Index (PPI)	3,8% annual	Project's internal rate of return (IRR)	% annual	254%
		Profitability Index (PI)	-	6,55



## CAPITAL EXPENDITURE STRUCTURE



## OPERATING COSTS STRUCTURE



Required amount of investments for project implementation (\$)

2,532,000

PLEASE GET IN TOUCH WITH US TO DISCUSS THE DETAILS



**Denis Usik**

CEO

pfactorytech@gmail.com

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