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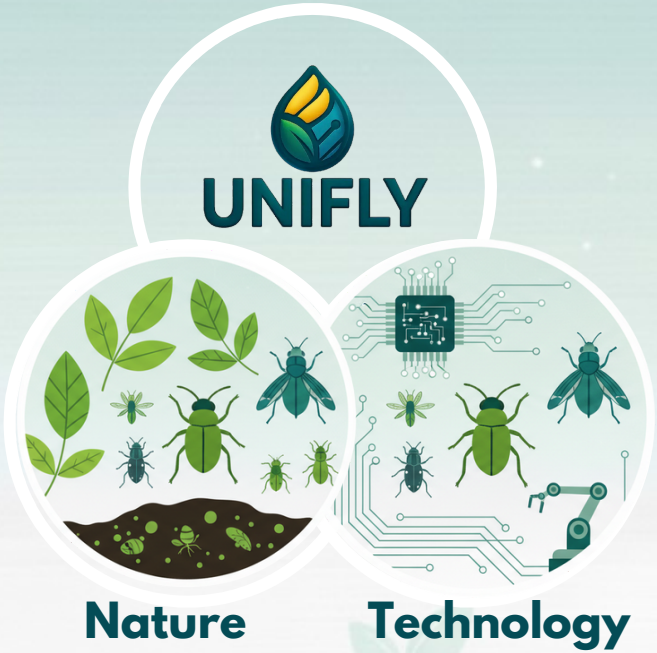
# Unlocking the Power of Insects for Real-World Solutions

www.uniflyinsect.com

# The Intersection of Nature, Technology & Sustainability

Where biology meets engineering for climate-positive innovation

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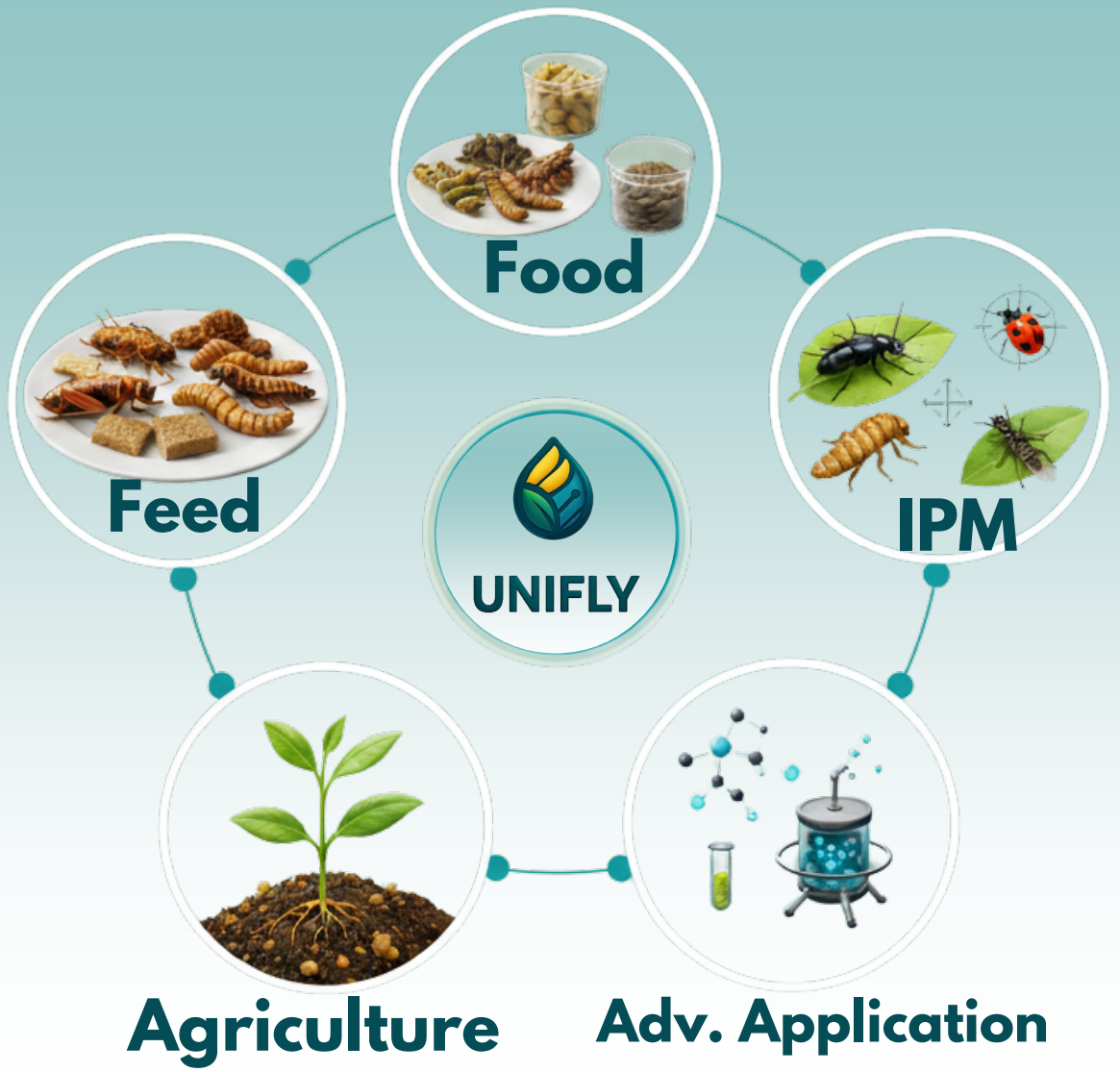
# Unifly's Core Domain

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# Insects as Food

A traditional protein making a modern comeback

## Insects Are Already Food for Billions

- Eaten by 2+ billion people worldwide
- 2,000+ edible insect species documented
- Consumed across Africa, Asia & Latin America
- Practiced for centuries across cultures
- Recognized by FAO as a future food solution
- Part of traditional diets in Northeast India

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# Insects as Food

A traditional protein making a modern comeback

## Why Insects Make Sense as Food

- 50–75% protein (dry weight)
- Complete essential amino acids
- Rich in iron, zinc, calcium & B12
- Highly digestible
- Low environmental footprint

## Our Current Production capacity

- 1 lakh crickets per day for North East India
- 100 kg of mealworms per day for Insect Protein

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# Insects for IPM ( Integrated Pest Management )

Sustainable pest control using beneficial insects

## Beneficial Insects for IPM

- **Ladybugs** → Aphids, whiteflies
- **Lacewings** → Aphids, thrips, mites
- **Trichogramma wasps** → Moth eggs, bollworms
- **Predatory beetles** → Caterpillars, soil pests

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# Insects Agriculture: Why It Matters

Insect farming as a sustainable livelihood and agricultural system

## Traditional Insect Agriculture

- Silkworm farming (sericulture)
- Honeybee farming (apiculture)
- Lac insect farming
- Cochineal insect farming

## Why Insect Agriculture Is Important

- Generates rural employment
- Low land requirement
- Low capital investment
- High value per unit area
- Climate-resilient livelihood
- Supports small and marginal farmers
- Diversifies farm income
- Strengthens rural economy

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# What Unifly Provides for Insect Agriculture

## The Problem Today

- Non-standard rearing practices
- Inconsistent production
- High disease losses
- Manual and inefficient systems
- Lack of scientific protocols
- Low farmer profitability

## Unifly's Solutions

- Standardized insect rearing equipment
- Controlled environment systems
- Scientific rearing protocols
- Disease management practices
- Feed optimization
- Production planning tools

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# Advanced Insects Applications

Engineering insects into next-generation biotechnology

## Why Insects Matter in Advanced Science

- Insects produce unique bio-compounds
- Natural antimicrobial peptides (AMPs)
- Enzymes and bioactive proteins
- Chitin and chitosan
- Functional biomolecules
- High biological efficiency
- Insects can be used as Bio sensors

## Unifly's Role

- Standardized insect production
- Controlled bio-processing
- R&D-driven extraction systems
- Scalable biological manufacturing
- Industry collaboration

# Insects as Feed: Our Selected Species

Functional insect protein for animal nutrition

Musca Domestica
larvae
( Small Farmers )

Hermetia Illucens
-BSFL larvae
( Big Farmers )

## Why We Selected These Two Insects

- **Naturally adapted to organic waste environments**
- **Extremely fast growth cycles**
- **High feed conversion efficiency**
- **Scalable for mass production**
- **High nutritional density**
- **Safe and biosecure**

# More Than Protein: Nutrition, Palatability & Immunity

Lauric acid

Palatable

AMP

## More Than Protein: Functional Nutrition

- High-quality protein and healthy fats
- Balanced essential amino acids
- Rich in lauric acid (antibacterial fatty acid)
- Highly digestible
- Micronutrients (iron, zinc, calcium)

## Palatability & Animal Health

- Highly palatable to poultry and fish
- Improves feed intake
- Enhances gut health
- Supports beneficial gut microbiota
- Improves feed conversion efficiency

# Natural Antimicrobial Peptides (AMPs)

AMP

## AMP in BSFL

- Defensins
- Cecropins
- Attacins
- Diptericins
- Lysozymes
- Thanatin-like peptides

## AMP in Housefly

- Defensins
- Cecropins
- Attacins
- Diptericins
- Muscin ( unique to housefly )

# What We Observed When Feeding Insect Products

## In Poultry

- Improved feed intake
- Better weight gain
- Stronger gut health
- Reduced diarrhea
- Lower mortality rates
- Improved feather quality
- Higher energy and activity
- Reduced disease outbreaks
- Lower need for antibiotic interventions

## In Fish

- Higher feed acceptance
- Faster growth rates
- Improved gut health
- Lower mortality
- Better stress tolerance
- Improved water quality
- Reduced disease incidence
- Lower antibiotic use

# Thank You

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