

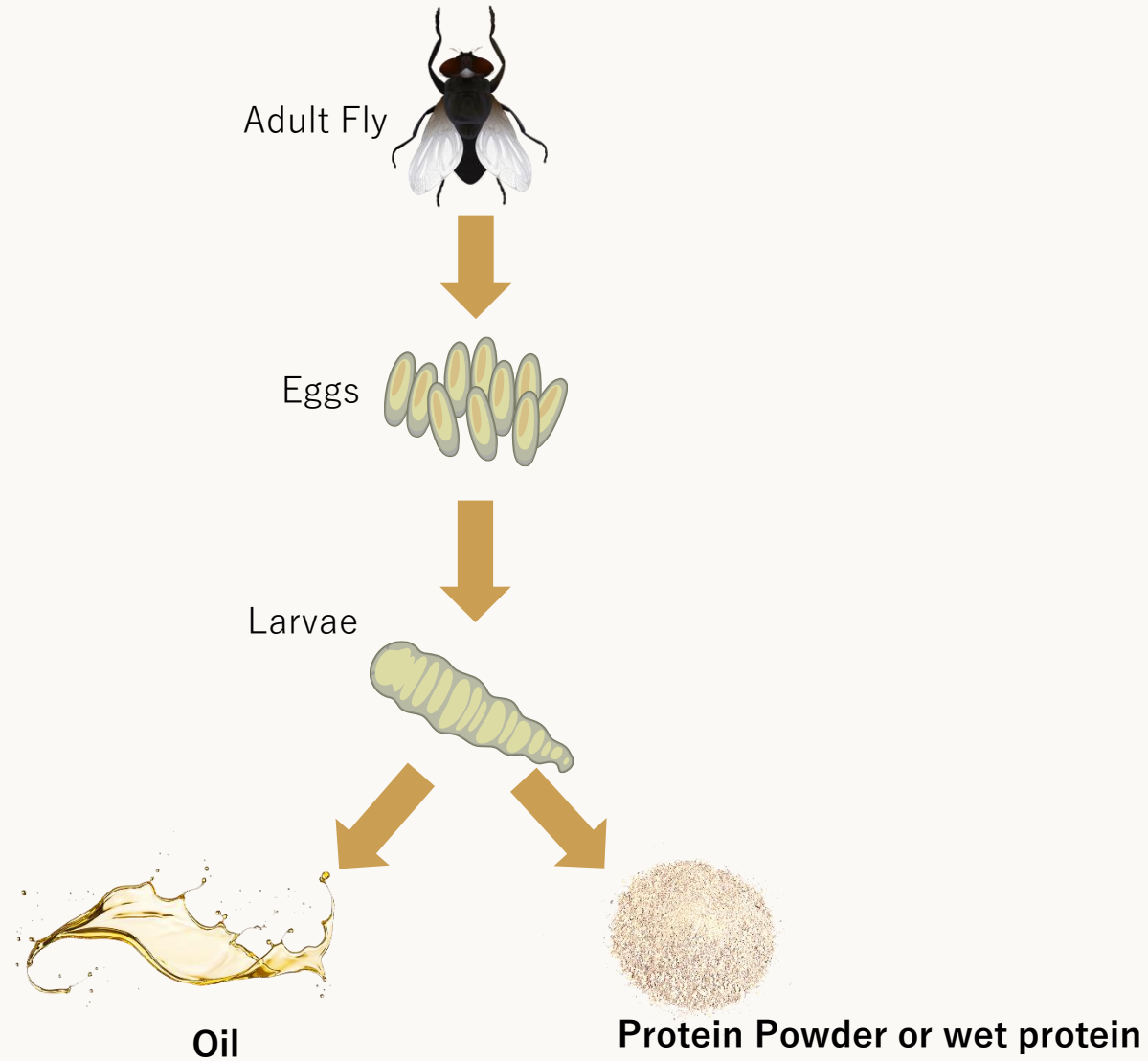


FLYING SPARK



**HARNESSING  
NATURE'S  
SECRETS,  
ENSURING  
NATURE'S  
FUTURE**

# FRUIT FLY DERIVED INGREDIENTS





Egg's Seeding



Larvae Rearing



The Larvae



Pupa

# Processing Line





Oil



Protein Powder

# COMPOSITION OF OFL PROTEIN POWDER

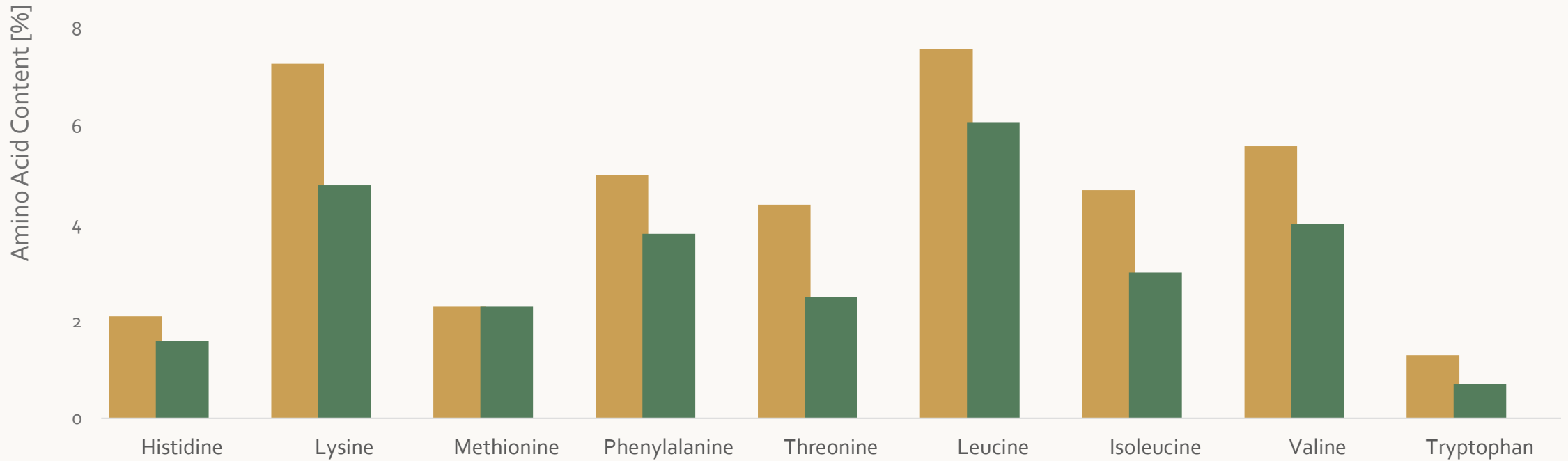
| NUTRITION         | % CONTENT [g/100g] |
|-------------------|--------------------|
| Protein           | 62.2               |
| Moisture          | 4.3                |
| Fat               | 17.1               |
| Carbohydrates     | 5.5                |
| Minerals          | 10.6               |
| Chitin (g/100g)   | 2.8 g              |
| Chitosan (g/100g) | 0.89               |
| Cholesterol       | ND                 |
| Gluten            | ND                 |
| PDCAAS            | 1                  |



# ESSENTIAL AMINO ACID CONTENT

■ Oriental FF protein powder    ■ FAO/WHO

- Content of all essential amino acids is higher than FAO/WHO requirements for children at the ages of 3-14
- *In-vitro* PDCAAS = 1.0



\* FAO requirements for children 3-14. Report of an FAO Expert Consultation, Dietary protein quality evaluation in human nutrition, 2013



# OFL PROTEIN HAS HIGH LEVEL OF ESSENTIAL MINERALS

| MINERAL          | CONTENT [mg/100g] | BENEFITS                                    |
|------------------|-------------------|---|
| <b>Calcium</b>   | <b>632</b>        | <b>Strong bone and teeth</b>                |
| <b>Magnesium</b> | <b>1600</b>       | <b>Muscle and nerve function</b>            |
| Phosphorus       | 2050              | Bone and teeth as well as energy metabolism |
| Potassium        | 364               | Heart and muscle function                   |
| Sodium           | 40.2              | Fluid balance                               |
| Zinc             | 26.2              | Immune function and wound healing           |
| Iron             | 21.6              | Oxygen transport                            |

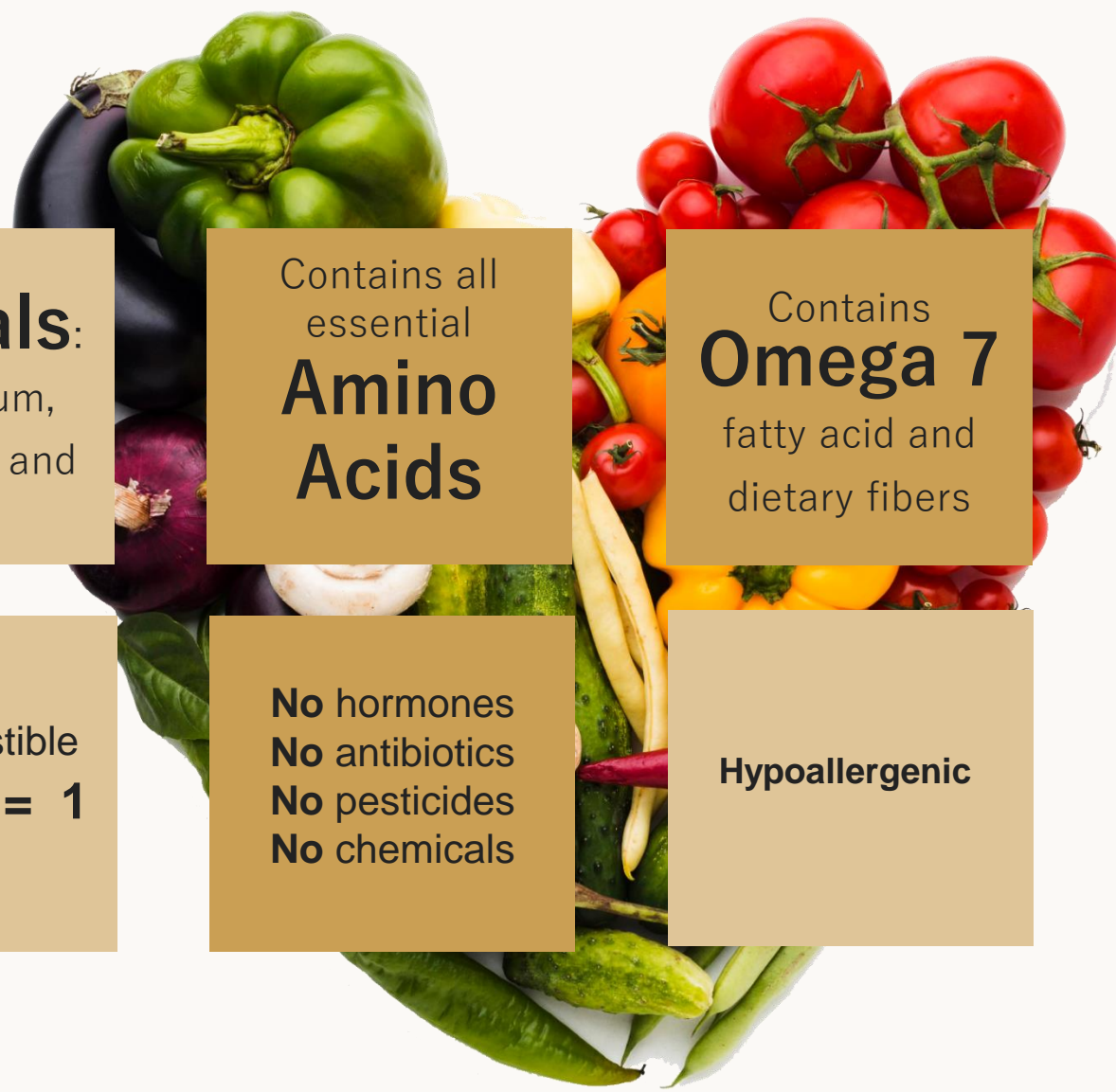
# OFL PROTEIN AS GOOD SOURCE OF **BENEFICIAL FATTY ACIDS**

| FATTY ACID                 | CONTENT [g/100g] | BENEFITS  |
|----------------------------|------------------|---|
| Palmitoleic acid (Omega 7) | 2.9              | Skin & coat health and anti-inflammatory properties |
| Palmitic acid              | 7.0              | Composition of cell membrane and source of energy   |
| Oleic acid (Omega 9)       | 4.5              | Skin & coat health and regulate cholesterol levels  |
| Linoleic acid (Omega 6)    | 1                | Essential FA, skin&coat, support immune system      |
| Linolenic (Omega 3)        | 0.1              | Essential FA, cognitive function                    |

## OFL PROTEIN AS GOOD SOURCE OF B VITAMINS

| FATTY ACID              | CONTENT [mcg/100g] | BENEFITS   |
|-------------------------|--------------------|--|
| Vitamin B1 (Thiamin)    | ≥850               | Energy production, Nervous system, cardiovascular health     |
| Vitamin B2 (Riboflavin) | ≥600               | Energy production, antioxidant, skin&coat health, eye health |
| Vitamin B7 (Biotin)     | ≥30                | Metabolic function, skin&coat health, gene regulation        |
| Vitamin B9 (Folic acid) | ≥30                | Growth and reproduction, DNA synthesis and repair            |

# MUCH BETTER THAN PLANT BASED PROTEIN



Rich in  
**Minerals:**  
Iron, Calcium,  
Magnesium and  
Zinc

Contains all  
essential  
**Amino  
Acids**

Contains  
**Omega 7**  
fatty acid and  
dietary fibers

Rich in  
**B & K2**  
vitamins

Highly digestible  
**PDCAAS = 1**

**No** hormones  
**No** antibiotics  
**No** pesticides  
**No** chemicals

**Hypoallergenic**

**Cholesterol  
Free**

# FLYING SPARK PROTEIN POWDER

Single Ingredient  
Multiple Natural Nutrients

Innovative

Effective

Sustainable

Healthy

100% Natural



# 1 COW IN 1 SQM IN 1 WEEK

The lifespan of the larva is **7 days**

Body mass **Multiplies by 250 in 7 days**  
In comparison, beef multiplies by 10 in one year

Exponential growth: **300-350 offspring per female**

Year-round continuous production process.  
**With no seasonal constraints**

Highly efficient production process, **100% utilization of the larvae**, residues processed into feed product



We are able to produce a quantity equal to 400 kg of beef  
in:  
**1 square meter every week!**

# MINIMAL ECOLOGICAL FOOTPRINT



**99%**  
Reduction in land  
due to  
Vertical farming  
In land use

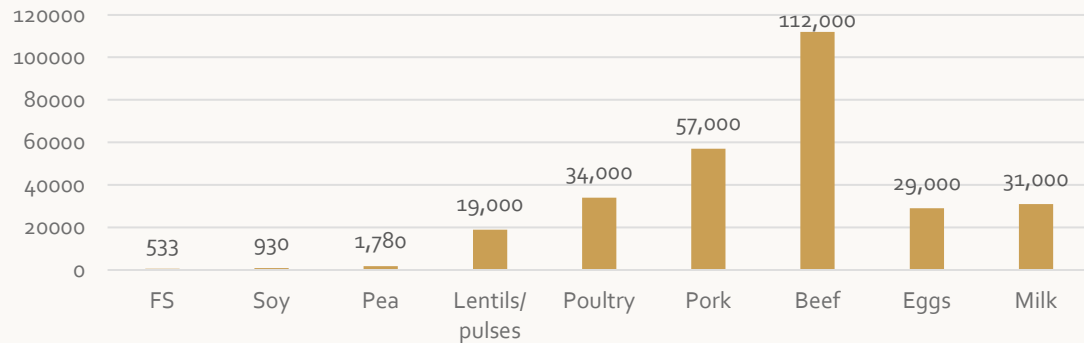
**0**  
Methane  
emissions

Waste  
minimization

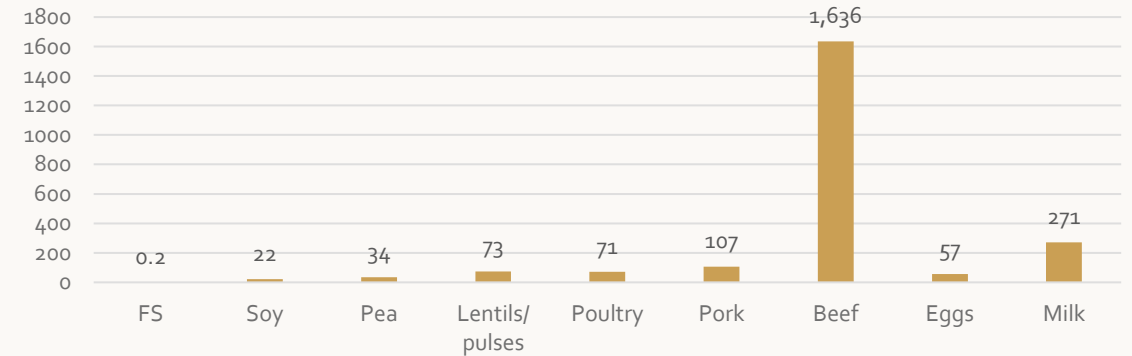
**100%**  
Cultivation in a  
closed and  
controlled  
environment

**99%**  
Less water  
consumption  
needed

**Water usage (L) for producing 1kg of protein**



**Land use (sqm) per 1kg of protein**



Mekonnen, M.M. and Hoekstra, A.Y. (2012), A Global Assessment of the Water Footprint of Farm Animal Products, Ecosystems  
 Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of farm animals and animal products, Value of Water Research Report Series No. 48, UNESCO-IHE, Delft, the Netherlands.

Hannah Ritchie and Max Roser (2020) - "Environmental Impacts of Food Production". Published online at OurWorldInData.org. Retrieved from: <https://ourworldindata.org/environmental-impacts-of-food> [Online Resource]  
 Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science, 360(6392), 987-992.

# FLYING SPARK PRODUCTION FACILITY





# REPLACING 10% - 20% OF MEAT, CHICKEN, FISH IN FLYING SPARK PROTEIN



**Enhance nutritional profile**

**Reduce use of land animal based protein**

**Clean label (less ingredients)**

**Reduce synthetic ingredients**

**Improved carbon footprint**

# THANK YOU

[land@flyingspark.com](mailto:land@flyingspark.com)  
[www.flyingspark.com](http://www.flyingspark.com)

