

# Insects Innovation in Gastronomy

## COURSE SUPPORT



### Module 4 Unit 4:

#### The use of insect products in disaster situations

*Disclaimer:*

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### Introduction: Why Do We Need New Food Solutions in Disaster Relief?

With the increasing climate crisis, migration, and global conflicts, the need for sustainable, accessible, and nutritionally dense food sources has become more critical than ever. The United Nations estimates that by 2050, the global population will reach 9 billion, requiring twice as much food as today.

- **Environmental Constraints** – Limited access to land, water, and food resources.
- **Emergency Response Needs** – The necessity for ready-to-eat, long-shelf-life foods.
- **High-Impact Nutrition** – Food must support immunity, healing, and recovery.

Insect protein emerges as an innovative and highly effective solution, offering high protein density, essential micronutrients, and environmental sustainability for disaster and aid kitchens.

### Key Insights & Takeaways:

#### ➤ A Sustainable & Nutrient-Dense Solution

Disaster relief food must be:

- **Nutritionally Dense** – High in protein, vitamins, and minerals.
- **Shelf-Stable** – Long-lasting and resistant to spoilage.
- **Portable & Ready-to-Eat** – Minimal or no preparation required.

The European Food Safety Authority (EFSA) has approved four nutritionally rich insects for human consumption:

- Crickets (*Acheta domesticus*)
- Grasshoppers (*Locusta migratoria*)
- Yellow Mealworms (*Tenebrio molitor*)
- Small Mealworms (*Alphitobius diaperinus*)

### Nutritional Comparison: Insects vs. Traditional Protein Sources

Nutrient	Beef (100g)	Chicken (100g)	Cricket Flour (100g)	Mealworm Flour (100g)
Protein	25-30g	27-33g	60-70g	50-60g
Iron (mg)	2.6mg	1.3mg	5-6mg	4mg

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Nutrient	Beef (100g)	Chicken (100g)	Cricket Flour (100g)	Mealworm Flour (100g)
Zinc (mg)	4mg	2mg	8-10mg	6mg
Omega-3 (g)	0.1g	0.1g	0.5g	0.3g
Shelf Life	Short (Fresh)	Short (Fresh)	Long (Powdered)	Long (Powdered)

Insect protein is more nutrient-dense, longer-lasting, and easier to transport than traditional protein sources, making it ideal for disaster and aid kitchens.

➤ **Essential Criteria for Disaster Food Solutions**

When developing food solutions for humanitarian aid, three essential factors must be prioritized:

- **No Cooking Required** – Since disaster zones may lack cooking equipment, food should be ready-to-eat or require only hot water.
- **Portable & Lightweight** – Food should be easy to transport for displaced individuals and aid workers.
- **Long Shelf Life** – Must be resistant to spoilage and nutritionally stable for long periods.

➤ **Disaster Kitchen Food Applications: High-Protein, Portable Solutions**

**Protein-Enriched Energy Bars**

- A nutrient-dense meal replacement with high protein, vitamins, and minerals.
- Ingredients: Dried fruits, grains, insect protein powder, insect oil.
- Portable & shelf-stable – Can be stored for up to 12 months.
- Nutritional Value: Each bar provides equivalent protein to 1 egg + essential micronutrients.

**Instant High-Protein Pasta**

- A quick-prep, non-cooking pasta alternative using insect flour and plant-based proteins.
- Designed to be ready-to-eat when mixed with hot water.
- Nutritional Value: Provides high protein + fiber for sustained energy.

**High-Protein Crackers & Dry Bread**

- Shelf-stable, nutrient-dense bread alternatives enriched with insect protein and insect oil.
- Designed as a long-lasting emergency food that mimics cheese or egg protein content.
- Portable and easy to transport.



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#### Instant Protein Soups

- Powdered insect protein soup base designed for quick preparation with hot water.
- Can be fortified with vitamins and minerals for additional nutrition.
- Provides a warming, nutrient-dense meal that supports immune function in disaster-stricken populations.

These solutions maximize nutritional density, ease of transportation, and long-term storage, making them ideal for humanitarian relief operations.

#### Conclusion

- Insect protein offers a scalable, nutrient-dense, and sustainable solution.
- Disaster kitchens must prioritize ready-to-eat, portable, and long-shelf-life foods.
- Strategic integration of insect protein into aid programs can combat malnutrition & food insecurity.

By embracing new-generation food solutions, we enhance emergency response efforts, improve global nutrition, and reduce environmental impact.