

# INNOVATIVE STRATEGIES FOR SUSTAINABLE OIL PRODUCTION: COLD-PRESSED OILS AND VALORIZATION OF OILSEED CAKES

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## BACKGROUND & CONTEXT

- Cold-pressed vegetable oils are increasingly demanded due to their **nutritional value and minimal processing**.
- Mechanical extraction (screw pressing) inevitably generates **oilseed cakes** as by-products.
- Despite being rich in **proteins, dietary fibers, and bioactive compounds**, oilseed cakes remain **underutilized**, especially in **small-scale (SME) oil mills**.
- Their valorization fits directly into **food waste and loss (FLW) reduction** and **circular bioeconomy** concepts promoted by **FoodWaStop COST Action CA22134**.

**KEYWORDS:** Cold-pressed oils - Oilseed cakes - Circular bioeconomy - By-product valorization - Functional foods - Small-scale oil mills - Zero-waste approach

## OBJECTIVE

To highlight innovative, sustainable strategies for integrating:

- high-quality cold-pressed oils,
- valorization of oilseed cakes,

into a zero-waste, circular bioeconomy model, with special emphasis on small- and medium-scale oil mills.



## APPROACH/CONCEPTUAL FRAMEWORK

- Analysis of cold-pressing as a **low-impact mechanical extraction technology**
- Identification of **nutritional and functional potential** of oilseed cakes
- Mapping of **valorization pathways** aligned with circular economy principles
- Focus on **local production systems** and SME oil mills



## RELEVANCE FOR FoodWaStop

Direct contribution to:

- **FLW prevention and reduction**
- **Valorisation of agrofood waste**
- **Circular bioeconomy**

Supports **Farm-to-Fork** and **local food systems**  
Strengthens **knowledge transfer to SMEs**.

## VALORIZATION PATHWAYS OF OILSEED CAKES



Oilseed cakes can be redirected into high-value applications such as:

- **Functional foods** (protein- and fiber-enriched products)
- **Nutraceutical ingredients**
- **Animal feed formulations**
- **Biodegradable packaging materials**
- **Bioenergy and bio-based materials**

Transforming by-products into **resources**, not waste.

## KEY INSIGHTS

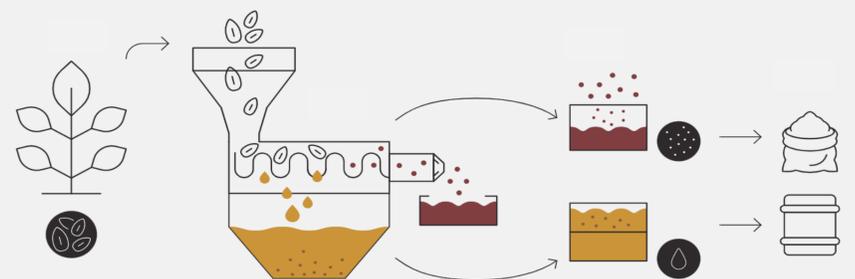
Cold pressing aligns well with **sustainability and clean-label trends**.

Oilseed cakes represent a **nutritionally valuable secondary output**, not a waste stream.

**Small-scale oil mills** are well-positioned to implement **zero-waste concepts**.

Valorization improves:

- environmental performance
- economic resilience
- local value chains



## CONCLUSIONS

Sustainable oil production should be viewed as a **dual-output system**: „oil“ & „value-added by-products“.

Valorization of oilseed cakes enables:

- reduced environmental impact
- enhanced sustainability of oil production
- creation of **new market opportunities**.

Circular strategies are **technically feasible** and **economically relevant**, especially for **small and medium oil mills**.

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