Turning agricultural waste into gold: The GOLDEN WASTE revolution in the fruit processing and juice industry

| Agricultural Residues | Food Waste | Growth Engine | Juice Industry | Waste Transformation |

A hidden opportunity in fruit and vegetable waste

Every year, vast quantities of fruits and vegetables are harvested but never consumed. Despite farmers determinations to produce the highest yield possible, up to 20 percent of fruit and vegetable loss occurs in agricultural production[1]. The fruit processing industry, particularly juice production, is a major contributor to this problem, generating staggering amounts of waste: peels, seeds, pits, pulp, and contaminated water. For example, An average of 34 % of citrus fruits are processed into juices leaving around half of their weight as waste (mainly peel, seeds and pulp); annually reaching 24.3 million tons per years[2].

Crisis meets opportunity

Beyond the environmental and economic toll, this waste represents a profound missed opportunity for innovation – especially when much of what is discarded is rich in functional and bioactive compounds.

In today's world, we are facing an escalating global food crisis: the population continues to grow rapidly, while land, water, and agricultural resources struggle to keep up with demand. Yet within this crisis lies tremendous potential: instead of being thrown away, food waste can be transformed into raw material for innovative, nutritious, and sustainable food products. Peels, "ugly" fruits, non-standard vegetables, and processing leftovers can be repurposed into fibers, purees, nutritional supplements, spreads, and more – turning a threat into a true opportunity.

The solution lies in shifting from a linear "produce – discard" model to a circular mindset – one that views agricultural waste not as an endpoint, but as a starting point for regeneration, innovation, and profitability growth.

The GOLDEN WASTE approach: from waste to growth engine

GOLDEN WASTE is "practical innovation's" unique approach that views agricultural waste – such as peels, pits, surplus produce, or visually imperfect fruits and vegetables – as a valuable resource. Instead of burning these by-products or sending them to landfills, GOLDEN WASTE transforms them into a new growth engine – one that drives innovation, generates new revenue streams, and increases profitability for the company.

Golan Heights Winery faced tons of leftover grape pomace every harvest season. They uncovered its hidden value – rich in antioxidants, flavonoids, and polyphenols – and transformed it into O.VINE: the world's first non-alcoholic, wine-infused water. *© all Dalit Einav*

Many food manufacturers currently treat by-products as a logistical problem to be managed-redirecting them to animal feed or disposing of them as industrial waste, often at a cost. This approach focuses on damage control but overlooks the vast economic and strategic potential hidden in these by-products. An alternative, broader perspective views industrial

food waste as a valuable resource-raw material for the development of new, distinctive, and profitable products that can boost the company's bottom line while positioning the brand as innovative and environmentally responsible.

Real-World Success Stories: From Concept to Practice: GOLDEN WASTE in Action

Practical Innovation, the company leading the GOLDEN WASTE transformation, has successfully developed breakthrough products from agricultural waste across industries. These innovations challenge conventional thinking by reimagining waste as a high-value resource.

Here are just a few examples that demonstrate how agricultural residues can become powerful growth engines:

Golan Heights Winery – from wine pomace to a premium infused beverage – wine water

Like many wineries, Golan Heights Winery faced tons of leftover grape pomace every harvest season. We uncovered its hidden value – rich in antioxidants, flavonoids, and polyphenols – and transformed it into O.VINE: the world's first non-alcoholic, wine-infused water.

This low-sugar, health-oriented beverage captures the full aroma and taste of wine, without the alcohol. It debuted at Fancy Food New York, earned global recognition, and was awarded Best New Water Concept by Evian at the World Water Congress.

This is a powerful example of this approach, the Golan Heights Winery, which transformed a costly industrial by-product into a growth engine. What was once considered waste requiring expensive disposal became the foundation for a new product, opening an additional segment within the beverage category – the company's core business. Through innovative thinking, the winery turned a liability into a business asset.

Shemen Shean – olive pomace transformed into flour

In olive oil production, about 80 % of the raw material becomes "pomace" – a waste product with high polyphenol content that makes it unsuitable for animal feed or compost. For Shemen Shean, we developed a gluten-free, antioxidant-rich olive-based flour, aligned with the Mediterranean diet. A patented innovation that repositions waste as a healthy, marketable superfood.

Shluhot Carrots – from sorting waste to natural confectionery

Visually imperfect carrots are typically destroyed or devalued. At Shluhot, we turned this surplus into a natural

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marshmallow – composed of 92 % fruits and vegetables, with no added sugar or preservatives. Delicious, sweet, healthy, and even "campfire-approved" – proving that fun and function can go hand in hand.

Shachar Group – bread waste becomes natural playdough

Shachar Group manages approximately 1,600 tons of expired or unsold bread each month – previously sold as low-margin animal feed. Instead, we transformed this waste into a safe, non-toxic, recyclable playdough for children. This innovation not only aligned with circular economy principles but also promotes sustainable education and creative play.

The innovation process

Practical Innovation, a leading innovation company in Israel, was established in 2010 out of a passion to bring practical application to the world of innovation and enable organisations to showcase genuine, creative, revolutionary innovation that serves as a significant growth engine for them.

Through our innovation processes, we develop creative and innovative solutions to complex challenges presented by our clients and build growth engines for them. Among other things, we develop waste-based growth engines for companies through our GOLDEN WASTE process.

The GOLDEN WASTE process consists of the following stages: concept development for the new product, the development process of the new product, and subsequently we accompany our clients through to the launch of the new product on the shelf.

Concept development is carried out using methods, methodologies, and thinking tools that have been developed in the company over the years and refined through the extensive experience we have gained, through information gathering and in-depth multidisciplinary research, and by incorporating professional experts into the process. Our expert panel includes a pool of over 400 leading experts in their fields, academics and industry professionals from Israel and around the world. For each project, we identify and recruit the experts with the relevant knowledge we need, according to the project's requirements. We also conduct targeted collaborations with research and development institutions and leading academic institutions such as the Hebrew University, Technion, and others.

Our processes begin with developing exciting ideas, but that's just the first stage. In the subsequent stages, the ideas are transformed into a practical and feasible development plan designed to create products ready for successful market launch.

A call to the juice industry: from residue to resource

For decision-makers in the juice and beverage sectors, the question is no longer whether agricultural waste can create value – but how to act on it.

GOLDEN WASTE offers a proven roadmap to transform what was once considered waste into:

- High-margin, health-conscious food innovations.
- Functional ingredients and nutritional innovations
- Reduced Environmental impact
- New engines of growth, profit, and resilience.

[1]https://cases.open.ubc.ca/insistence-on-cosmetically-perfect-fruits-vegetables/
[2]https://www.mdpi.com/2071-1050/15/3/2482s.

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