



## CASE STUDY

# Oils Solutions for Dairy Alternatives

### CHALLENGE:

Identifying the right oils for creating successful dairy alternatives.

### SOLUTION:

ADM has a comprehensive portfolio of oil options and the technical ingenuity to meet all your formulation challenges.



# Dairy alternatives consumers will love

Today's consumers are increasingly seeking plant-based alternatives to their traditional dairy items for various dietary and lifestyle reasons. Demand is high in this category and product developers are presented with an exciting challenge to meet consumer expectations for authentic taste, texture and appearance. While the absence of milkfat can pose unique challenges, ADM's ability to formulate in a system with plant proteins creates an opportunity for developing delicious and satisfying dairy alternative products.



Oils are a key factor in emulating the functional and sensory characteristics of traditional dairy products. ADM gives you a broad portfolio of oils in the industry and the technical ingenuity, insights and research capabilities to give you the edge in formulating dairy alternatives that meet today's consumer demands for plant-based nutrition with great taste.

In this case study, we explore these application categories and their specific formulation challenges:



**Non-dairy yogurts**



**Non-dairy frozen desserts and novelties**



**Non-dairy liquid creamers**



**Vegan and non-dairy spreads**

**62% of U.S. plant-based consumers say that they eat/drink dairy alternatives because of their nutrition benefits; 63% also reference their health benefits.**

—Source: ADM Outside Voice, proprietary research

## Featured Oil Solutions for Non-dairy Applications

- Coconut Oil
- High Oleic Sunflower Oil
- High Oleic Soybean Oil
- Cottonseed Oil
- Palm Olein

## Enzymatic Interesterification Technology

ADM was the first in the North American market to use enzymatic methods to interesterify oil solutions, products modified to have a specific melting point, solidification and oil binding properties. This technology creates stable fat systems that impart functional attributes and desirable taste in your products, so you can deliver exactly what consumers want, time after time.

ADM's interesterified oils include:

- Palm Kernel Oil
- Palm Oil
- Soybean Oil
- High Oleic Soybean Oil

## Spoonable non-dairy yogurt solutions

Consistent texture, viscosity and firmness are all key to creating a non-dairy yogurt formulation with the characteristics consumers want. Other challenges include masking off notes from alternative protein sources while allowing sweet and fermented flavors to shine through.

In testing oils typically used in the non-dairy yogurts category, we found that saturate content and solid fat content did not influence texture, even in a refrigerated product.

Our research also revealed that while many oils were deemed suitable fat sources for alternative yogurts:

- A better textural experience was demonstrated using **High Oleic Sunflower Oil, Coconut Oil and Palm Olein**.
- The overall cleanest and most balanced flavor was achieved with **Palm Olein**, which also tested well for color and viscosity characteristics.
- The highest liking score was received for soy yogurt alternatives formulated with **Palm Olein**.



While dairy is expected to remain virtually flat in the next 5 years (2022-27 CAGR: 0.3%), dairy alts are expected to grow at a 4.0% CAGR, with ice cream alts (7.6%) and yogurt alts (5.6%) projected to have the fastest increase.

—Source: Euromonitor

## The scoop on what's best for frozen desserts

For formulating non-dairy frozen desserts, the melting point of oils influences its mouthfeel characteristics, ability to hold air (overrun) and overall viscosity. Oils with a higher melting point can cause too much mouth coat and increased firmness out of the freezer and can also impact flavor release.

Try these oils for non-dairy frozen dessert formulations:

- **Cottonseed Oil's** functional attributes benefit both soft-serve styles and hard-pack styles. It was shown to provide neutral flavor, good mouthfeel and the ability to support targeted overrun.
- **Coconut Oil's** and **Palm Olein's** melting point and solidification properties most similarly mimic the characteristics of dairy fat. As a result, these oils can be used to replace dairy in the frozen novelty sector.



## The dairy-like qualities consumers crave

Non-dairy liquid creamers have a huge impact on the taste of the drinks they're added to, and challenges arise when trying to replicate dairy cream's characteristics within a formulation. Aspects like color/whitening effect, clean taste and oxidative stability all play a role in recreating the dairy-like mouthfeel consumers recognize. Oils with a high oxidative stability translate to a longer shelf life and cleaner flavors.

**High Oleic Soybean Oil** and **High Oleic Sunflower Oil** are excellent solutions for non-dairy creamer formulation. These monounsaturated fats enhance stability while keeping the saturate burden low for labeling. Both are known for their oxidative stability, which translates to a longer shelf life, and both have clean flavor profiles that don't interfere with neutral flavors or enhanced flavor profiles.

**Plant-based creamers grew by 24% in dollars and 12% in units, while animal-based creamer unit sales declined by 1.4%.**

—Source: Plant Based Foods Association's 2022 Report / SPINS



## Success with plant-based non-dairy spreads

The resources and technologies for producing butter alternatives have been well established as margarine has been around for so long. A key characteristic to consider when formulating a non-dairy spread is its melting properties, as how the product melts when being consumed impacts flavor release and salty taste. Another aspect to consider is its spreadability straight from the refrigerator.

ADM's technical expertise in enzymatic interesterification and fat systems allows us to develop blended solutions comprised of **Palm**, **Palm Kernel** and/or **Coconut Oil** to target key functional parameters required for today's spread formulations.

The enzymatically interesterified fat can then be blended with liquid oil to target desired characteristics, melting properties and nutritional goals for a plant-based spread.



**Dollar sales of substitute spreads grew 18% faster than their dairy counterparts in Q1 of 2023, vs the same period a year ago.**

—Source: Nielsen IQ



## Take any dairy alternative to the next level

Reach out to learn how ADM can partner with your team in perfecting formulations for other non-dairy application categories.

**Alternative Cheeses**

**Dips**

**Non-dairy Milks**

**Alternative Sour Creams**

## Dairy alternatives expertise beyond oils

While oils are an essential component to achieving the ideal taste, texture and functional properties of dairy alternatives, a holistic approach is often necessary to fully realize the desired attributes of a finished product. ADM's broad ingredient portfolio provides a full resource of components for product developers, including:

- Sweeteners
- Texturizers
- Flavors and Colors
- Plant-based Proteins

## Our commitment to doing more

ADM is committed to responsible sourcing policies and monitors the performance of its direct palm oil suppliers, all of which have established No-Deforestation policies. In addition to membership in RSPO (Roundtable for Sustainable Palm Oil), ADM is a member of the NDPE IRF (Integrated Reporting Framework) Active Work Group. Membership in these organizations supports ADM's commitment to ending deforestation and preserving biodiversity and communities in our supply chain.

## Let's Collaborate

Partner with ADM and learn how our diverse portfolio of oils can help you create the next generation of delicious, consumer-favorite dairy alternatives.

Visit [adm.com/en-us/products-services/human-nutrition/products/edible-specialty-oils](https://adm.com/en-us/products-services/human-nutrition/products/edible-specialty-oils) to get started.

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