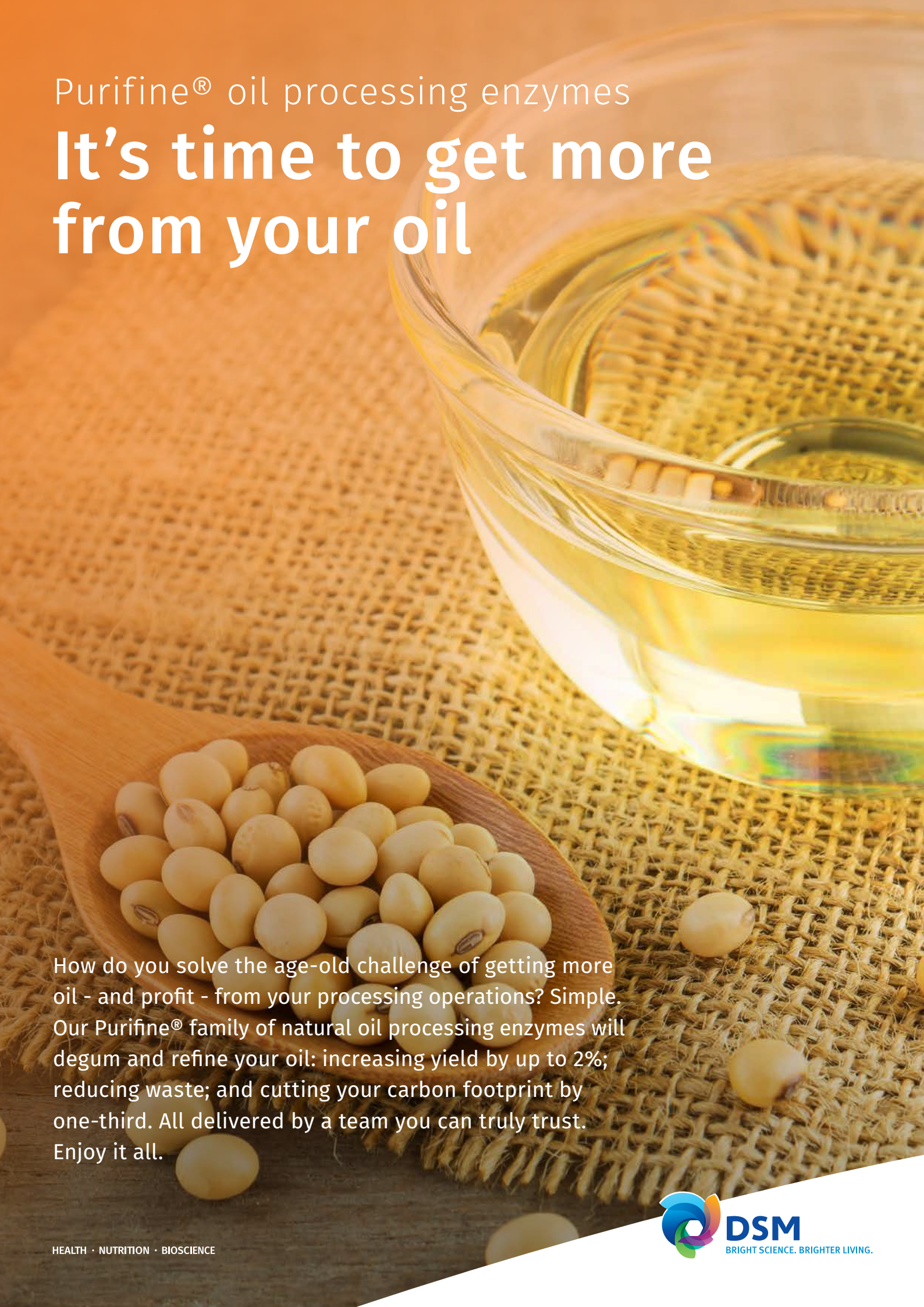
Purifine® oil processing enzymes

It’s time to get more from your oil



How do you solve the age-old challenge of getting more oil - and profit - from your processing operations? Simple. Our Purifine® family of natural oil processing enzymes will degum and refine your oil: increasing yield by up to 2%; reducing waste; and cutting your carbon footprint by one-third. All delivered by a team you can truly trust. Enjoy it all.

HEALTH · NUTRITION · BIOSCIENCE

DSM
BRIGHT SCIENCE. BRIGHTER LIVING.

Introducing the Purifine® family: a smart way to refine vegetable oil

Our new Purifine® PLA1 enzyme refines your vegetable oil by consistently and efficiently reaching phosphorus specification - and increasing yield. While for degumming crude oil, our Purifine® 3G enzyme is proven to separate the gum from the oil more effectively - with less emulsion and fat – enabling greater oil yield and higher protein in the meal. Great for your profit – and the planet, with fewer chemicals, less by-product and lower energy consumption.

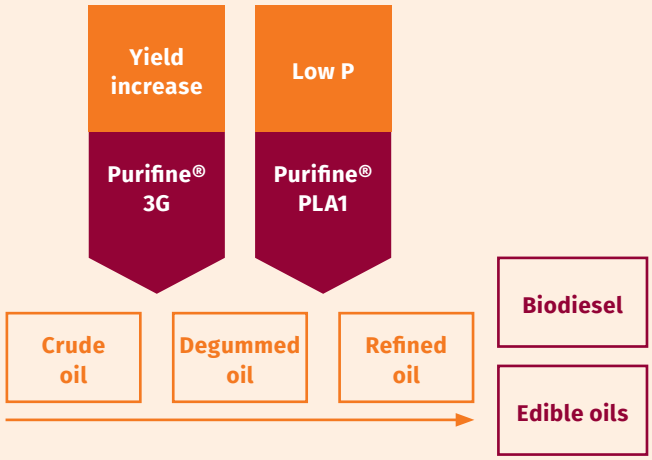
Customers need:

- **Higher yield**
  from both oil degumming and vegetable oil refining processes
- **Efficient phosphorous specification**
  of vegetable oil
- **Guaranteed reliability and consistency**
  with less by-product and waste
- **Sustainable oil processing**
  with fewer chemicals and a lower carbon footprint

What the Purifine® family delivers:

- **A 2% yield increase**
  in both crude oil degumming and vegetable oil refining
- **Efficient phosphorous specification**
  of vegetable oil
- **A natural, safe and proven solution**
  that's easy to use (and caustic-free)
- **Carbon footprint reduction of up to 35%**
  through increased processing efficiency and lower energy consumption

DSM's complete Purifine® portfolio



Purifine® PLA1 consistently delivers increased yield and efficient phosphorus specification.

- Purifine® PLA1 not only enables oil processing plants to reach product phosphorus specification with consistent processing performance; it also reduces oil loss by up to 2% - and decreases carbon footprint.
- This hassle-free, safe solution requires less chemicals to be used in the refining process; it prevents soap formation; and it reduces centrifuge fouling (due to the liquid lyso-gums).

Purifine® 3G increases oil yield by forming oil molecules from phospholipids which in tun reduces the amount of oil in gums. The gum volume and emulsification capacity are also reduced, which means cleaner separation of the oil from the heavy phase; lower fat; and higher protein content in the meal.

1. For soybean oils that have a phosphor level between 1000 and 1200 ppm 2. Process implementation in collaboration with engineering partners 3. Source: Life Cycle Analysis Purifine® PLA1 2019

HEALTH · NUTRITION · BIOSCIENCE

DSM
BRIGHT SCIENCE. BRIGHTER LIVING.