HIGH OLEIC LOW LINOLENIC
WINTER OILSEED RAPE OIL

Rich in Oleic Acid
Source of Alpha Linolenic Acid
Resistance to cold and diseases and tolerance to lodging, giving the HOLL V316OL variety **good yields and stability of performance**

High oleic acid content and low production of smoke and polar compounds that give HOLL oil **high stability to heat and frying cycles**

Low in saturated fatty acids and trans fatty acids and a good omega-6 / omega-3 ratio for **regular use of HOLL oil and health effects**

A good organoleptic perception and a better appreciation of the golden color, the original color of the French fries, allowing many cycles of frying in oil HOLL

Increased storage and use times for **economic gains and better profits**

Source of ALA having **direct health benefits** and **good taste and color perception of food**
PRODUCERS & SUPPLIERS: AGRONOMIC
AGRONOMIC PROPERTIES OF THE HOLL VARIETY
V316OL

Impact of genetic developments on yields of rapeseed (Pinochet, 2012)

Due to its characteristics, root anchorage strength and rigid stems, resistance to parasitic attacks, the HOLL variety V316OL is very insensitive to lodging.

V316 OL is resistant to cold and lodging with a long vegetative rest that makes it very suitable for the cultivation of rapeseed under various conditions.

Rapeseed 0 = without erucic acid

Performance
- Stability
- Long vegetative rest
- Suitable foliar growth
- Good root–soil anchorage system
- Adapted architecture
- Good adaptation to various pedoclimatic conditions
- Resistance to stressful conditions

Flexible Crop Management – Sustainable Crop
PRODUCERS & SUPPLIERS: TECHNOLOGIC
The use of high oleic rapeseed oil during frying results in high-quality products for a long time of use. Therefore, this oil seems to be an interesting alternative for applications using higher temperature during the preparation of food.

Roman Przybylski, Department of Chemistry and Biochemistry, University of Lethbridge, Canada, 2013

TECHNOLOGICAL QUALITIES OF THE HOLL OIL

- High oleic acid content
- Low PUFA
- High smoke point
- Low foaming
- Few polar compounds formed
- Low oxidation

- Presence of Omega-3 PUFA
- Omega-6 / omega3 ratio of 4.3

Formation of polar components during rotational frying in different oils:

<table>
<thead>
<tr>
<th>Oil Type</th>
<th>Smoking Point (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOLL</td>
<td>246</td>
</tr>
<tr>
<td>High-oleic sunflower</td>
<td>245</td>
</tr>
<tr>
<td>Sunflower</td>
<td>220</td>
</tr>
<tr>
<td>Palm + coco</td>
<td>205</td>
</tr>
<tr>
<td>Peanut</td>
<td>241</td>
</tr>
</tbody>
</table>

 Degradation rate of vitamin E during frying (Matthäus 2006)

HOLL displayed the best frying life, greater than the traditionally used hydrogenated frying shortenings as indicated by the lower amounts of polar compounds, oligomers and nonvolatile carbonyl components. The lower amounts of thermo-oxidative degradation products formed during frying in the HOLL oil directly affect their amounts in fried foods.

Roman Przybylski, Department of Chemistry and Biochemistry, University of Lethbridge, Canada, 2013
CONSUMERS: NUTRITIONAL
"The current average consumption of low ALA vegetable oils and margarines is too high. It should be diminished. On the contrary, the consumption of vegetable oils rich in ALA should be considerably increased, which would lead to an increase in the total consumption of vegetable oils. The consumption of vegetable oils rich in ALA should be daily."

EFSA Health Claim:
"Alpha-linolenic acid (ALA) contributes to maintain normal cholesterol". The food is at least one source of ALA within the meaning of the 'source of omega-3 fatty acid' claim set out in the Annex to Regulation (EC) No 1924/2006. The consumer must be informed that the beneficial effect is obtained by the daily consumption of 2 g of ALA.
CONSUMERS: ORGANOLEPTIC
ORGANOLEPTIC QUALITIES OF THE HOLL OIL

Averaged acceptance sensory scores for products fried in different oils

Changes in color during rotational frying in different oils

The oils have undergone 1, 25, 50 or 80 cycles of frying
An 8-member panel appreciated the color of the fries, especially the golden color – ITERG 2017

Fries cooked in HOLL oil have a golden color, "the original color of the fries", well appreciated by the consumer even after 80 cycles of frying.

HOLL: High oleic rapeseed
HOLL: Hydrogenated rapeseed
CAN: Conventional rapeseed
SOY: Soybean oil
HSOY: Hydrogenated soybean oil

(Przybylski 2013)
BENEFITS
OF HOLL OIL
**BENEFITS HOLL OIL: SUPPLIER & OHC SIDES**

**Economic gain & better profits**

- **INCREASED USE LIFE**
  - Heat deterioration **40% slower than rapeseed or soybean oils** (Przybylski, 2013)
  - Formation of oxidized compounds **20% lower compared to high oleic sunflower oil** (Matthaüs, 2006)
  - Less toxic compounds formed **even after 11 days of frying** (Przybylski, 2013)
  - Less acrylamide formation **in fried food** compared to conventional rapeseed, soybean, corn and olive oil (Zhang 2015)
  - **Increased frying time** (6 to 11 days compared to conventional rapeseed & soybean oils)

- **INCREASED SHELF LIFE**
  - **High stability due to its characteristic fatty acid composition** (rich in oleic acid)
  - Good protection against oxidation **due to its natural richness in antioxidants**, i.e. vitamin E
BENEFITS HOLL OIL: CONSUMERS
Repeated Use and Nutritional Benefits

**NUTRITIONAL QUALITIES**

- High levels of **mono- and polyunsaturated fatty acids** (78% oleic acid, 12% linoleic acid and 3% alpha-linolenic acid)
- **Omega-6 / omega-3 ratio equal to 4.3** corresponding to recommended intakes
- Naturally rich in **vitamin E**
- Low in **saturated fatty acids** and only trace amounts of **trans fats**

**ORGANOLEPTIC QUALITIES**

- **Good sensory perception and acceptability** of the oil and fried foods, even after repeated frying cycles
- **Few off-flavors produced** during frying compared to other oils
- **Stability of taste and color** after heating and repeated fryings

From report # 17/01/23361, 2017; Matthaüs, 2006; Przybylski, 2013
HOLL OIL: AN OIL WITH MULTIPLE BENEFITS

**PRODUCERS & SUPPLIERS**

- **AGRONOMIC**
  - V316OL
  - Resistance to cold
  - Tolerance to Phoma
  - Good rooting capacity
  - Tolerance to lodging
  - Flexible mid early cycle

- **TECHNOLOGIC**
  - High oleic acid content
  - Low PUFA content
  - High smoke point
  - Low foaming & oxidation
  - Few polar compounds formed

- **NUTRITIONAL**
  - High oleic acid content
  - Low SFA content
  - Presence of PUFAs
  - Only trace amounts of trans fats
  - Good omega-6 / omega-3 ratio
  - Naturally rich in vitamin E

- **ORGANOLEPTIC**
  - Perception by trained panels
  - Few off-flavors produced during frying
  - Good acceptability of fried foods
  - Stability of taste
  - Better appreciation golden color: "the original color of fries"

**CONSUMERS**

- **GOOD YIELDS AND PERFORMANCE STABILITY**
- **HIGH STABILITY TO HEAT AND FRYING CYCLES**
- **REGULAR USE AND HEALTH EFFECTS**
- **MANY FRYING CYCLES AND ECONOMIC GAIN**
Thank You