



HIGH OLEIC LOW LINOLENIC **WINTER OILSEED RAPE OIL**

Rich in Oleic Acid

Source of Alpha Linolenic Acid

HOLL IN 4 POINTS

PRODUCERS & SUPPLIERS



AGRONOMIC

Resistance to cold and diseases and tolerance to lodging, giving the HOLL V316OL variety **good yields and stability of performance**

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



TECHNOLOGIC

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

CONSUMERS



NUTRITIONAL

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**

Source of ALA having **direct health benefits** and **good taste and color perception of food**



ORGANOLEPTIC

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**

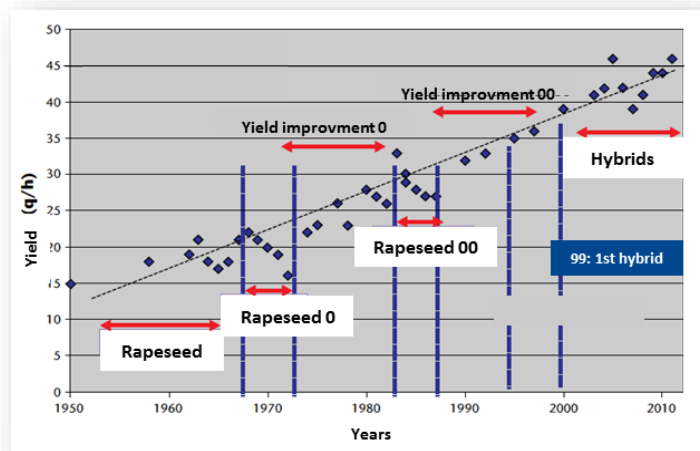
PRODUCERS & SUPPLIERS: AGRONOMIC



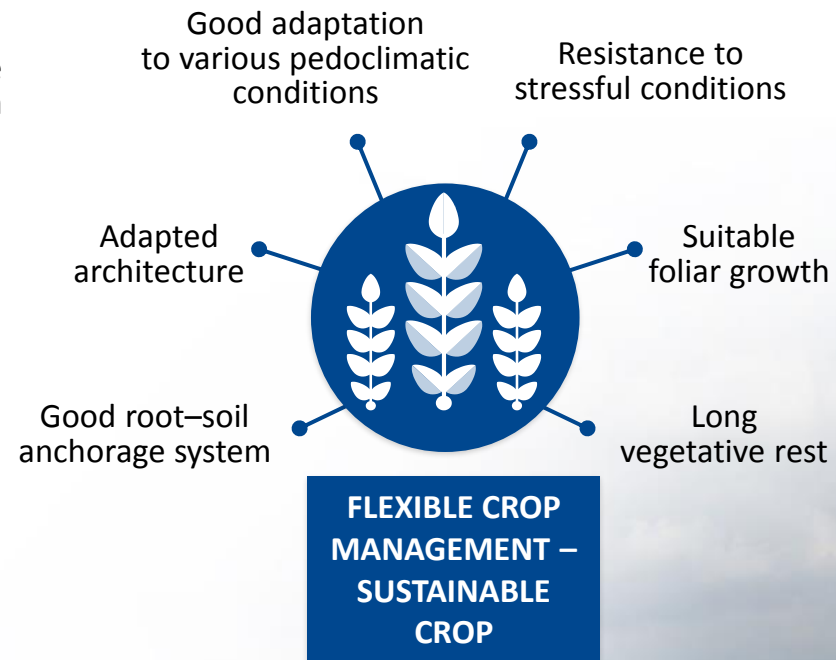
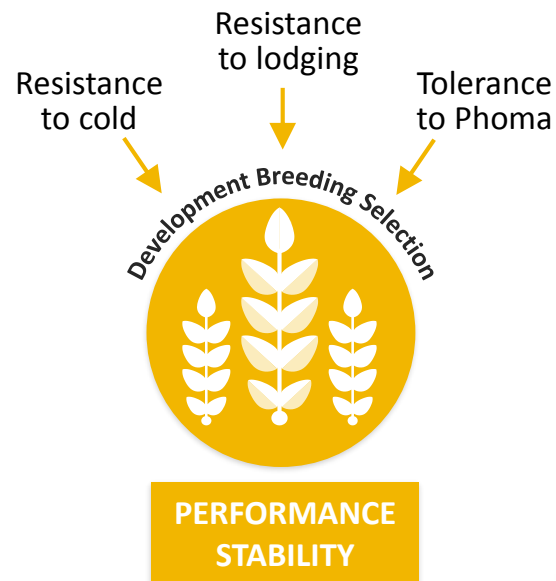
AGRONOMIC PROPERTIES OF THE HOLL VARIETY

V316OL

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



Rapeseed 0 = without erucic acid



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.

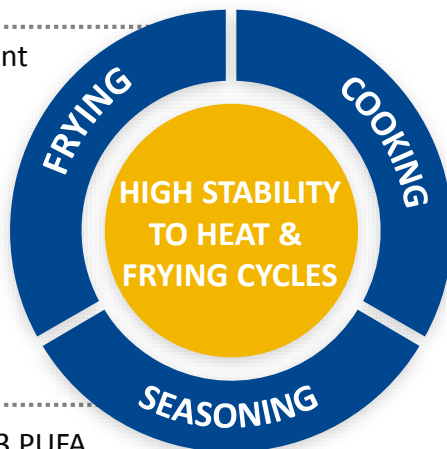


PRODUCERS & SUPPLIERS: TECHNOLOGIC



TECHNOLOGICAL QUALITIES OF THE HOLL OIL

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



- High oleic acid content
- Low PUFA

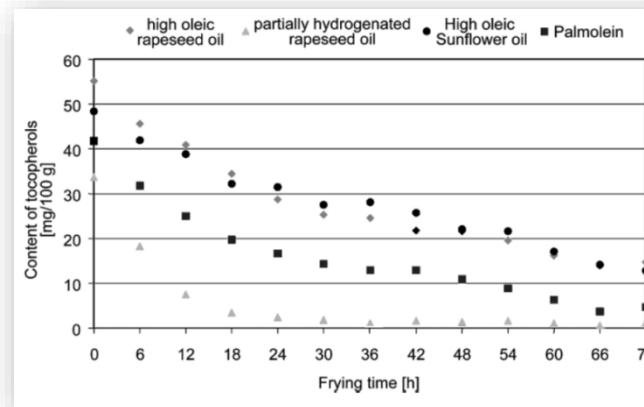
- Presence of Omega-3 PUFA
- Omega-6 / omega3 ratio of 4.3

"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."

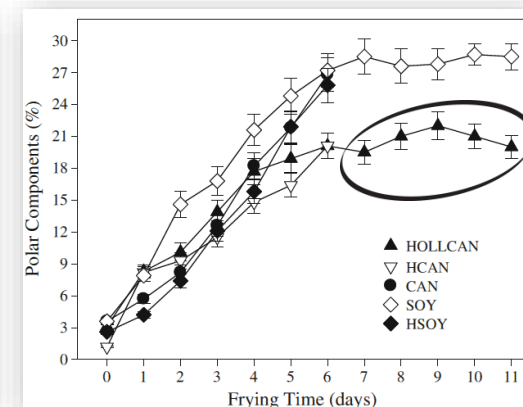
Roman Przybylski, Department of Chemistry and Biochemistry, University of Lethbridge, Canada, 2013

"HOLL oil 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 affects their amounts in fried foods."

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



Degradation rate of vitamin E during frying
(Matthäus 2006)



Formation of polar components during rotational frying in different oils:

HOLLCAN: HOLL oil

HCAN: Hydrogenated rapeseed oil

CAN: Conventional rapeseed oil

SOY: Soybean oil

HSOY: Hydrogenated soybean oil

(Przybylski 2013)

	Smoking point (°C)
HOLL	246
High-oleic sunflower	245
Sunflower	220
Palm + coco	205
Peanut	241

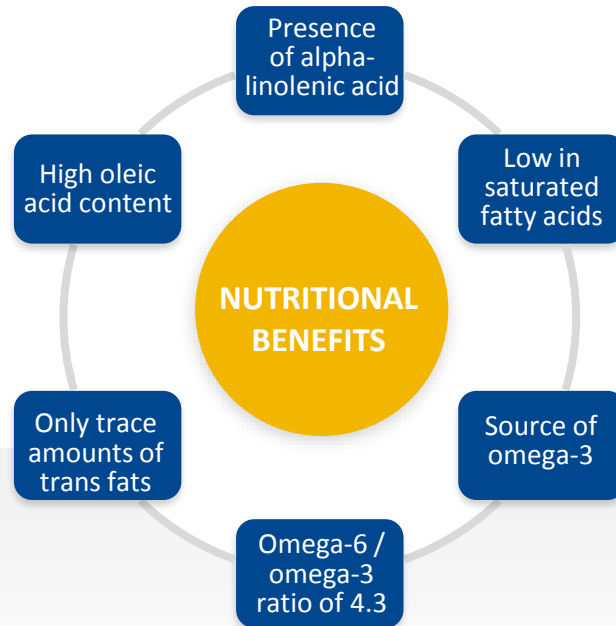
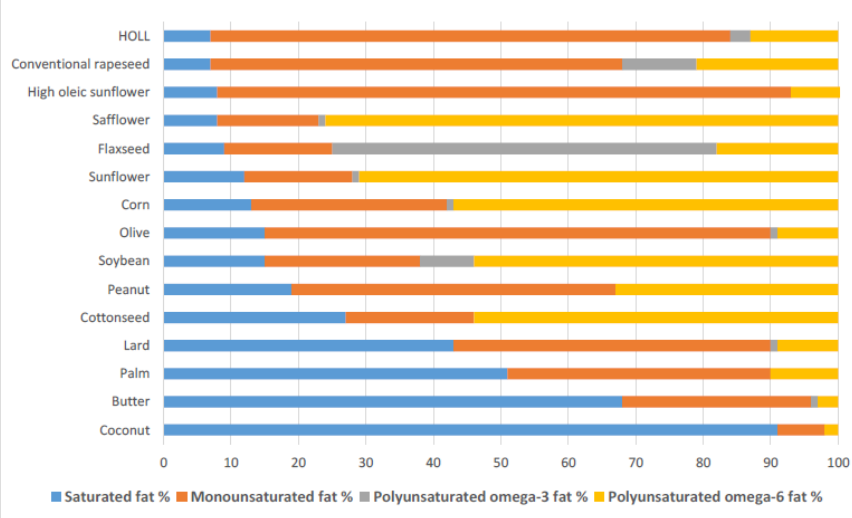
(ITERG 2017)

CONSUMERS: NUTRITIONAL



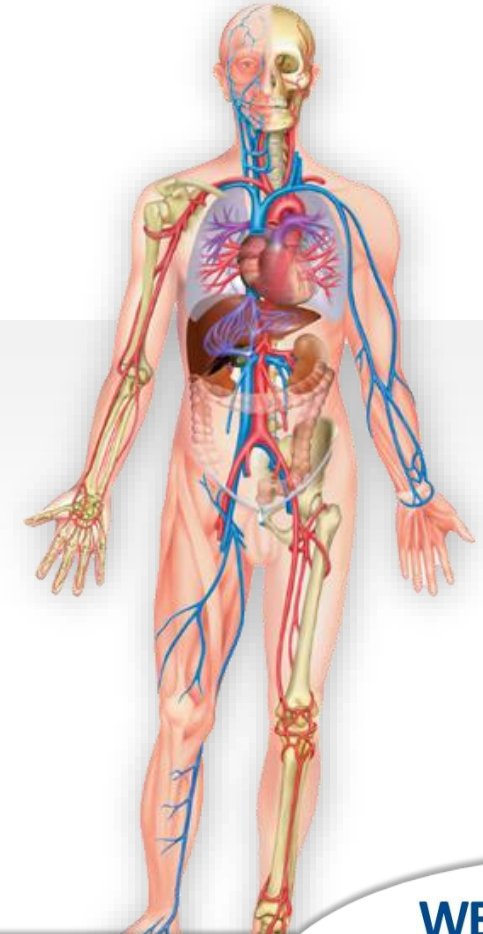
NUTRITIONAL BENEFITS OF THE HOLL OIL

Figure 1: Comparison of fatty acid composition of dietary fats (%)



HEALTH BENEFITS

Prevention Cardiovascular system



ANSES report - December 2016

"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:

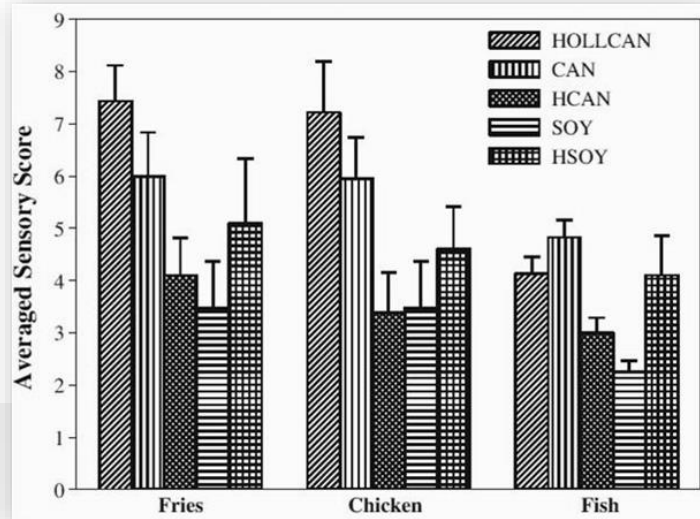
"Alpha-linolenic acid (ALA) contributes to maintain normal cholesterol". The food is at least one source of ALA within the meaning of the 'source of omega-3 fatty acid' claim set out in the Annex to Regulation (EC) No 1924/2006. The consumer must be informed that the beneficial effect is obtained by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



CONSUMERS: ORGANOLEPTIC

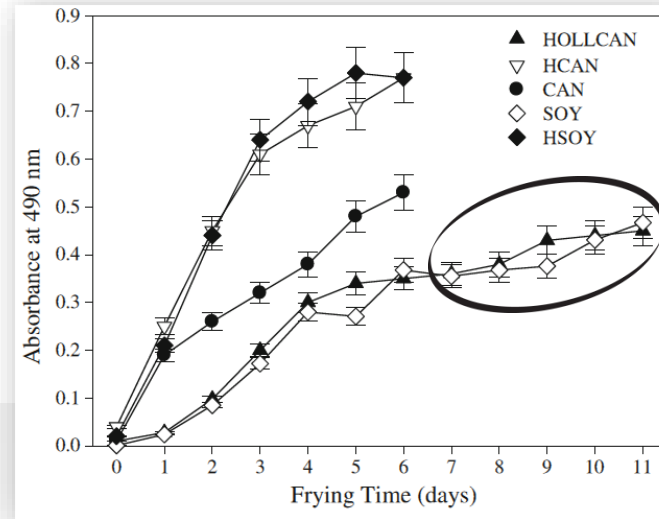


ORGANOLEPTIC QUALITIES OF THE HOLL OIL

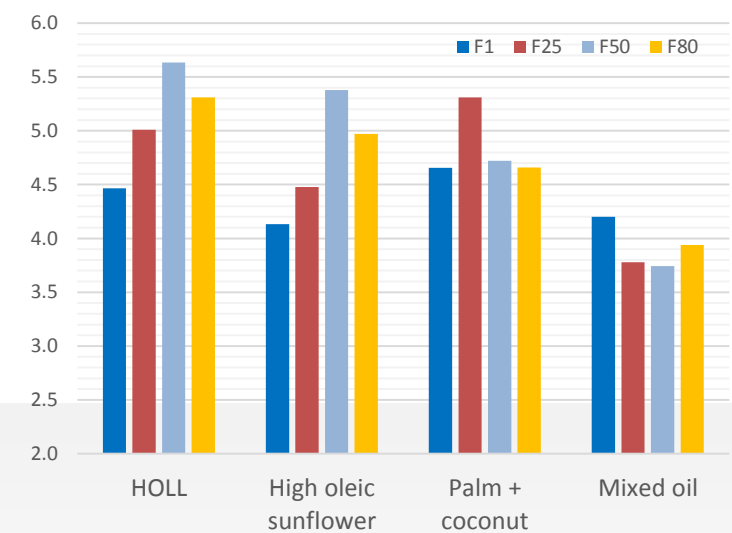


Averaged acceptance sensory scores for products fried in different oils

HOLLCAN: HOLL oil | **HCAN:** Hydrogenated rapeseed oil | **CAN:** Conventional rapeseed oil | **SOY:** Soybean oil | **HSOY:** Hydrogenated soybean oil | (Przybylski 2013)



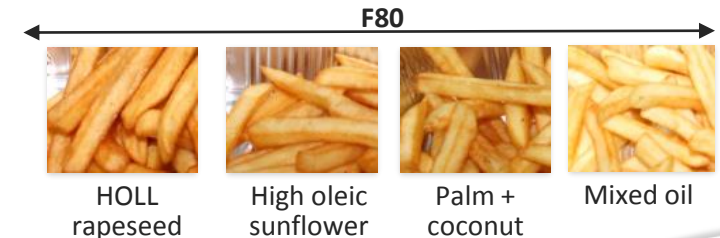
Changes in color during rotational frying in different oils



Appreciation of the golden color after 1, 25, 50 or 80 cycles of frying

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.





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



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

**GOOD YIELDS AND
PERFORMANCE STABILITY**



TECHNOLOGIC

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

**HIGH STABILITY TO HEAT
AND FRYING CYCLES**



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

**REGULAR USE AND
HEALTH EFFECTS**



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"

**MANY FRYING CYCLES
AND ECONOMIC GAIN**

Thank You

