LIPID UNIVERSE

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Nutritional Facts & Significance of Oil Blending

Health Tips

Vegetable Oil Industry - Challenges Ahead

Trade News

Croton Nut Oil

Oil Technologists' Association of India (North Zone)

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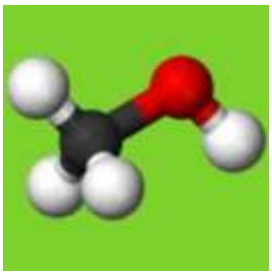

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Founded in 1943,Oil Technologists' Association of India (OTAI) is a premier organization of technologists, scientists, academia, researchers, industrialists, analytical service providers etc. in the field of Oils and fats, oil seed, oleo-chemicals and allied fields.
Main functiona are :-

- Strengthening its stake in the Food Industry
- Work towards and advocate for a business friendly policies ,help in establishing Good manufacturing practices
- Promoting knowledge sharing through organizing national and international seminars and Conferences.
- See more details at www.otai.org.

Food Safety and Standards Authority of India (FSSAI) is an apex regulator authority Under Ministry of Health and Family Welfare ,GOI created for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption.

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- Frame standards and regulations
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- Claims & advertisement
- Packaging and labeling
- Supply chain
- FSMS,GMP,GAP & GHP
- Quality certification, sampling and analysis
- Offences, penalties
- Pesticide, antibiotics, metals residues and GM foods
- Taxes and duties

Business sessions

- How national and international compliance issues affect Import & export?
- ease of doing business, action plan, target & performance
- Foreign direct investments in food sector, policies and Procedures
- Innovation/start ups
- Investment in food & allied industry
- Make in india for food industry
- State governments to present the status of food industry, issues, policies, support & offers to invite investments.
- R&D and technology collaborations

DELEGATE FEE

S.No.	Time Line	OTAI & FIEO Member	Other Delegate	Foreign Delegate	EEN Delegate
1.	Up to 31st March 2017	` 12,500	` 20,000	US$400	US$125
2.	Up to 1st April 2017	` 17,500	` 25,000	US$500	US$150

Taxes: 15% Service tax is payable on the above price and will be charged extra.

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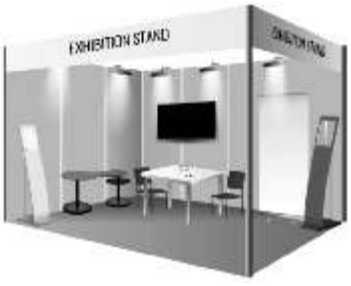

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- Power connection (220V) 5 Amp. x 2
- Fascia
- Carpet
- Waste Paper Basket

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S.No.	Exhibitor	Up to 28th February 2017	After 28th February 2017
1.	Indian exhibitors	` 2,50,000	` 3,00,000
2.	Foreign exhibitors	US$ 4,000	US$ 5,000
3.	EEN exhibitors	US$ 1,000	US$ 1,500

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Editor's desk

Increasing import of edible oil has become a permanent feature of Indian vegetable oil trade and industry ecosystem. Till recently the import of crude oil was high as compared to the processed one. The import of edible oil in first eight month (November to June) of current oil year ending in October 2016, has increased by 10% (97.63 lakh MT as compared to 88.49 lakh MT in last year). In same period import of RBD palmolein has doubled from 9.13 lakh MT to 17.77 lakh MT.

Enhanced import of refined oil make less room for Indian edible oil refineries thus force reduced industrial activity in the sector. There is demand from industry to increase the duty difference from present 7.5% to 15% so that Indian edible industry becomes competitive.

Indian oil seed and other allied products being non GMO have good demand and can fetch better price in international market especially in EU countries. The export of Indian origin edible oils in small pack should be encouraged and policies can be framed accordingly. This will help in earning valuable foreign exchange and encourage Indian manufacturer to produce world class product. In long run it will prove extremely beneficial for Indian edible oil industry and lead them on the path of integration with international market .

Yours truly
C S Joshi
Editor

Oil Technologists' Association of India
(North Zone)

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NUTRITIONAL FACTS & SIGNIFICANCE OF OIL BLENDING

DR. SUDESH K. HANDOO
BUNGE INDIA Pvt. Ltd.
RAJPURA (Pb,)

Three groups of naturally occuring organic compounds which are of fundamental importance to both animals and plants are oils & Fats, carbohydrates and proteins. Fat is an important component of human diet and fulfills several nutritional functions. It is a concentrated source of energy and helps to increase caloric density of diets. Oils and fats furnish about 9.0 K cal. of energy per gram as compared to 4 K cal. Furnished each by carbohydrates and proteins. This high caloric value of oils and fats makes it possible for the body to store it in fat depots and can be drawn in periods of heavy work or fasting.

The choice of healthy cooking oil has been a controversial subject. Over the years evidence has accumulated to show the nutritional significance of various edible oils. Earlier, it was believed that Polyunsaturated fatty acids (PUFA) rich oils prevented Coronary Heart Disease by lowering blood cholesterol and the dietary advice was to use high PUFA oils like Kardi & Sunflower oils Rice bran oil, Cottonseed oil, Soybean , Corn oil etc are also good source of PUFA. Subsequently it was established that prolonged usage of high FUFA oils had undesirable effect of lowering good cholesterol also along with bad cholesterol. These oils undergo rapid oxidation and could lead to production of free radicals in the human system and thereby enhance the risk of certain cancers, cataracts, rheumatoid arthritis and contribute to aging process.

All these findings have led to change with respect to the earlier recommendations. Cholesterol Balancing rather than cholesterol lowering and oxidation stability has now become important concern. The American heart Institute now recommends use of oils or their blends having an equal proportion of saturated, mono-unsaturated and polyunsaturated fatty acids.

Although higher intake of PUFA content is no longer recommended but even the present day recommendations do suggest that 33% of total intake of fat should be derived from PUFA as PUFA are the only source of essential fatty acids commonly known as Omega 6 and Omega 3 fatty acids. In the body linoleic acid is converted into long chain polyunsaturated fatty acids (PUFA). The n-6 PUFA are precursors for the synthesis of prostaglandins and Thromboxanes which are beneficial in the following ways:

- Contraction of smooth muscles
- Functioning of central nervous system
- Enzyme activity in in lipid metabolism
- Body weight maintenance
- Skin texture
- Proper kidney and liver functions
- Blood circulation
- Regulation of pulse rate
- Maintenance of blood pressure
- Reproduction
- Teratment of gastric ulsers
- Treatment of bronchial asthma
- Inhibition of platelet aggression

The World Health Organisation (WHO) suggests that the ratio of Omega 6 and Omega 3 in the diet should be 5-10. There are three parameters to adjudge any cooking oil as the healthiest oil. These are ratio of Saturated : Monounsaturated : Polyunsaturates , ratio of essential fatty acids (Omega 6 / Omega 3) , presence of natural antioxidants and thermal stability of oil..

Oils with high content of PUFA get thermally deteriorated during frying which is generally done at high temperature of 170-180 C.

Blending of oils is an answer to all these issues. Blending of 2 or more than 2 oils improves thermal stability and provides right balance of SFA : MUFA : PUFA.

The following table shows the composition of common vegetable oils vis -a- vis the above recommendations

Oil	**Fatty acids % Weight**			**Essential Fatty acid Ratio Omega6/Omega 3**
	SFA	MUFA	PUFA	
Safflower (Kardi)	10	15	75	69
Coconut oil	84.3	12.9	2.8	100
Sesame oil	22.7	37.4	39.9	100
Corn oil	16	37	47	46
Palm oil	50	40	10	20
Sunflower oil	12	21	67	69
Cottonseed oil	29	20	51	100
Soybean oil	16	24	60	10
Mustard oil	6	67	27	2
Rice Bran oil	20	43	37	15
Groundnut oil	20	50	30	32
RECOMMENDED	**Below 33%**	**Above 33 %**	**About 33%**	**5-10**

RICE BRAN OIL :

Rice bran oil has ideal SFA/MUFA/PUFA ratio & EFA ratio quite closer to the recommended levels, contains three types of natural antioxidants as against only one category found in most of the other vegetable oils leading to comparatively better oxidative stability. The natural antioxidants in RBO protects against Coronary problems, certain cancers, arthritis, as well as combats the ageing process. Also the unsaponifiable matter of RBO contains high value non-toxic neutraceuticals which promotes good health and nutritional benefits.

The oryzanol in RBO effectively lowers serum cholesterol by increasing good cholesterol and lowering bad cholesterol.

Squalene present in RBO aids skin nutrition, maintains integrity & tone of the skin with anti wrinkle action.

RBO contains tocotrienols which has anti-thromboitic and anti cancer properties.

RBO has 4-hydroxy 3 methoxy cinnamic acid which stimulates hormonal secretion and rejuvenates health.

Foods fried in RBO absorbs 15% less oil ensuring lower calorie intake.

RBO has ideal ratio of SFA:MUFA:PUFA and is closest to WHO recommendations.

There are no disadvantages of RBO. Infact this oil is extensively used in Japan, Korea, China, Taiwan and Thialand. In Japan RBO is popularly known as Heart oil. In Western countries, RBO has acquired the status of health food.

SOYBEAN OIL :

The essential fatty acid ratio of SBO is quite ideal due to higher content of linolenic acid (Omega 3), but PUFA content is much higher than recommended levels.

Advantages of Omega – 3 : There is a good evidence that SBO has unique essentiality in human nutrition due to Omega – 3 fatty acid. SBO is good source of gamma Linolenic acid which is also nutritionally desirable.

Due to high PUFA content, the use of SBO needs to be coupled with use of some other vegetable oil having higher content of saturates / Monounsaturates to arrive at desired ratio of SFA/MUFA/PUFA .

The major disadvantage with SBO is flavor reversion and development of beany odour on storage.

SUNFLOWER OIL :

Sunflower oil has also very high content of PUFA than the recommended levels. Due to its composition and quality, SFO is good for human consumption. However due to high ratio of Omega 6/Omega 3, sole and prolonged usage of SFO is no longer recommended because of adverse impact on good cholesterol.

SFO contains highest level of Alpha Tocopherol which is the most active form of Vitamin E. SFO has low level of Linolenic acid and is more stable as compared to SBO.

COTTONSEED OIL :

CSO like SFO is also rich source of PUFA but essential fatty acid ratio is far away from the WHO recommendations. As such the sole use of CSO can also not be considered ideal.

Various tocopherol isomers that act as naturally occuring antioxidants are found in CSO. Besides Alpha tocopherol, it has gamma tocopherol which has greater effectiveness as an antioxidant.

CSO is also rich source of phytosterols which have cholesterol reducing property.

MUSTARD OIL :

Mustard oil has the most ideal SFA/MUFA/PUFA ratio as well as essential fatty acid ratio. But most of the varieties of mustard oil found in India have very high content of Erucic acid ranging from 35 to 48 %

High content of erucic acid present in mustard oil has been held responsible for hampering the condition of electric impulses in the Heart.

Mustard oil contains gamma linolenic acid which is precursor of Eicosatrienoic & Arachidonic acid which are essential fatty acids

Mustard oil has excellent oxidation stability due to presence of sulfur compounds mostly allyl-isothiocynate.

Due to high Erucic acid, its usage should be coupled with other vegetable oils.

BLENDED VEGETABLE OILS

Only Rice bran oil is somewhat close to the recommendations of WHO & American Heart Institute. Blending of more than two oils can meet the above recommendations and put forward an excellent scope

for providing a balanced nutritional source. The following table shows the ratio of SFA/MUFAPUFA & Omega6/Omega3 ratios of a few possible multiple oil blends.

Table : composition of a few multiple oil blends

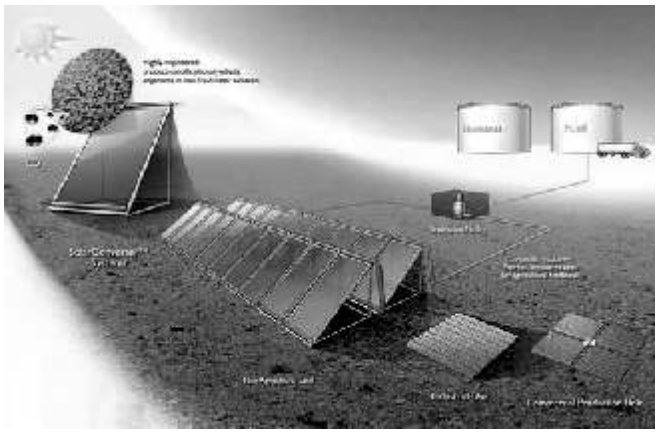
OIL BLEND	**Fatty acids % Weight**			**Essential Fatty acid Ratio Omega6/Omega 3**
	SFA	MUFA	PUFA	
SBO+GNO+MO (30:20:50)	12	50	38	10.5
RBO+SFO+PO (40:10:50)	**34**	**39**	**27**	**12**
MO+CSO+PO (50:10:40)	26	51	23	11
MO+RBO+SFO (50:40:10)	13	54	35	13
SBO+GNO+RBO (30:10:60)	19	38	43	15
SBO:PO:RBO (40:20:40)	**23**	**35**	**41**	**10**
SBO:PO:RBO (70:15:15)	**22**	**29**	**49**	**9**
SBO:PO:RBO (60:20:20)	**24**	**31**	**45**	**9**
SBO+GNO+PO (30:30:40)	31	38	31	13
SBO+GNO+PO (50:20:30)	27	34	39	11
RECOMMENDED	**Below 33%**	**Above 33 %**	**About 33%**	**5-10**

In India currently blending of more than two oils is not permitted which is a major hurdle in designing multiple oil blend for balanced fatty acid composition & providing other healthy nutrients in the blends as different oils have different nutrients & these can be brought together in the multiple blends.

Trade News

Alternative Fuels

A Ground Broken on a Test Pilot Plant for Fuel Sweating Organisms



A Massachusetts company is moving forward on a test pilot facility for fuel sweating plant production — yes, that's right these plants sweat diesel. They've created gene altered single cell plants that take sunlight and carbon dioxide and turn them directly into biofuel. It is kind of like fuel from algae without the extraction step. The plants' byproduct is basically vehicle ready, which cuts down significantly on processing costs. Joule Unlimited says their fuel will be a clean, cost effective alternative to petroleum. Now all they have to do is prove their lab tested technology in the real world and we'll be on the road to running on sweat.

The perspiring plants live in a panel that looks like a green solar panel, and are placed on the ground at an angle to maximize their exposure to the sun. The organisms are laid in a layer underneath a glass panel in a mixture of carbon dioxide infused water which serves as their grub. They sunbathe, eat and then sweat usable diesel — what a life! Apparently unlike algae which needs to be compressed to extract fuel these single cell plants aren't single use. They can sweat fuel and live to sweat another day for eight weeks straight. The fuel only needs to be separated from the water mixture post sweat lodge to be used.

Joule Unlimited is breaking ground on their test pilot facility 30 miles north of Austin in Leander, Texas. They chose the spot for it's low risk of freezing temperatures and high amount of sunlight. The move from the lab will help scientists at Joule understand the organisms' reactions to the unpredictability of the natural world — including fluctuations in sunlight and temperature. Sounds like a promising technology to us. Reusable sweat secreting plants that eat carbon dioxide and sunlight and directly produce biofuels for use as an alternative for oil?

B Scientists turn nuclear waste into diamond batteries that last virtually forever

Researchers have found a way to use diamonds to convert nuclear waste into long-lasting batteries. A team of physicists and chemists at the University of Bristol discovered the new technology, which transforms thousands of tons of troublesome nuclear waste into lab-grown diamond batteries capable of generating a small amount of electricity. The diamond batteries, like the precious gems they are based on, could last essentially forever.

Ushering in what researchers are calling the "Diamond Age" of battery power, the technology developed by the University of Bristol team uses man-made diamonds formed from nuclear waste, plus a small amount of radioactive energy, to create a low-current battery durable enough to outlast human civilization. The team unveiled their discovery on Friday at a sold-out lecture at the Cabot Institute. While traditional batteries require wires and coils to operate, the diamond-based battery needs only to be placed near a radioactive source in order to begin generating small electrical currents. The lack of moving parts makes the battery far more durable than its conventional counterparts.

Additionally, the diamond batteries could help dispose of nuclear waste in a safe, permanent way, while resulting in usable energy that does not produce greenhouse gas emissions or require supplemental fuel. "There are no moving parts involved, no emissions generated and no maintenance required, just direct electricity generation," said Tom Scott, Professor in Materials in the University of Bristol's Interface Analysis Center. "By encapsulating radioactive material inside diamonds, we turn a long-term problem of nuclear waste into a nuclear-powered battery and a long-term supply of clean energy."

Early prototypes of the battery rely on nickel-63 as the radiation source, which is encased within the man-made diamond, but the team is testing other options to boost

efficiency and output. Next on the list is the addition of carbon-14, a radioactive version of carbon which can be easily harvested from graphite blocks. The United Kingdom currently stores around 95,000 metric tons of graphite blocks, so the utilization of carbon-14 in diamond batteries would greatly reduce the cost and risk of storing that particular form of nuclear waste.

C Cutting-edge MIT research converts carbon emissions into usable liquid fuel

What if our carbon emissions could actually minimize our carbon footprint? Chemical engineers from MIT have made an exciting discovery that could change the way we approach emissions: they've figured out how to transform them into liquid fuel.

Several innovations underway could help decrease our dependence on fossil fuels, including biofuel made from agriculture leftovers like corn husks. But concerns over cost, especially for developing countries, drove the MIT team to look for a cheaper alternative.

Related: New devices generate renewable energy from evaporation

Several biogas plants in Europe already burn gas to generate electricity, but the MIT researchers say the process is prohibitively expensive and wasteful. Converting those emissions to a liquid fuel, which is easily transported, is reportedly more cost-effective.

They found that waste gas emissions from steel mills, power plants, and even garbage dumps could be converted to acetic acid, also known by its household name vinegar, using bacteria. That vinegar can then be turned into liquid fuel using a special type of yeast. They published their research in the Proceedings of the National Academy of Sciences journal.

More than just an academic paper based on lab experiments, the research has already been tested in the field. A pilot plant outside of Shanghai has been successfully utilizing the process of turning waste gases into fuel for about six months now, and a new "semi-commercial" plant is currently in the works. The new plant would be 20 times the size of the Shanghai station.

Courtesy: The Guardian

Malaysian Palm oil giant IOI sues RSPO over suspension

- The Roundtable on Sustainable Palm Oil suspended IOI Group's sustainability certification in March. Now the company has filed a lawsuit against the association in Zurich, the seat of the RSPO.
- The company characterized the move as a "painful" decision given its "great commitment and attachment" to the RSPO, but maintained that it had been "unfairly affected" by the suspension.
- A leaked memo written by the RSPO's secretary general reveals the company told him it "has done no wrong" and "prefers if this legal action is kept low profile."

A Malaysian company that helped found the Roundtable on Sustainable Palm Oil is suing the RSPO for suspending its sustainability certification over alleged environmental transgressions in Indonesia.

IOI Group has filed a lawsuit in Zurich against the RSPO, the world's largest association for ethical palm oil, whose corporate and NGO members jockey to set the terms for sustainable production of the commodity, used in everything from snack foods to cosmetics and detergents.

Since the suspension was announced in March, key customers like Unilever, Kellogg and Nestlé have cut supplies from IOI, which has lost permission to sell the RSPO-brand "Certified Sustainable Palm Oil" (CSPO) preferred by companies trying to clean up their supply chains.

Three of IOI's subsidiaries in the Ketapang area of Indonesian Borneo are alleged to have cleared rainforest without the proper government permits, operated on carbon-rich deep peat soil, and used fire to clear land cheaply — practices not uncommon in an industry rife with illegality.

"The decision to challenge the RSPO Board's suspension decision is a difficult and painful one for us to take…we have great commitment and attachment to RSPO," IOI chief executive Lee Yeow Chor said in a statement.

"On the other hand, we feel that we have been unfairly affected by the extent and scope of the suspension," he added, arguing that the penalty should apply only to IOI's plantations so that its refineries could continue marketing CSPO and avoid disrupting its customers' supply schemes.

The suspension was seen as an indication the RSPO might finally be getting tough on the oil palm growers that make up the bulk of its membership, as the roundtable has been criticized for failing to enforce its standards. But

the lawsuit — as well as a surprising move by palm oil giant Felda Global Ventures to decertify 58 of its mills, and the continued refusal by Malaysian and Indonesian growers to hand over their concession maps — are perhaps signs of a backlash against stricter oversight by the RSPO, whose membership also includes palm oil traders, retailers and banks.

“No one should be surprised that IOI has chosen to bully its critics,” said Richard George, head of forests at Greenpeace UK. “The RSPO and its members must meet this intimidation head on by excluding IOI until it has cleaned up its act and repaired the forests and peatlands it has destroyed.”

An internal memo written by RSPO secretary general Darrel Webber reveals IOI told him that the roundtable had “no right” to suspend the company, that it had “done no wrong” and that “it prefers if this legal action is kept low profile.”

The roundtable, Webber wrote, was insured against such claims up to 10 million Malaysian ringgit ($2.5 million).

“Whilst the situation is serious, I do not feel it is something to be overly worried on,” he added. “The claims made are simple enough to counter…The only issue I have with this dramatic turn of events is the amount of time and money that will be wasted in this process.”

The legal proceedings will begin in June.

Courtesy: Money Bag

RPT-Monsanto develops plan for GMO U.S. soy lacking EU import approval

Monsanto Co is developing plans to prevent a new variety of biotech U.S. soybeans from entering European markets where they are not approved, leaders of two agricultural trade groups said, in a sign of the growing impact of regulatory delays on the world's largest seed maker.

The company is working with representatives of the U.S. farm sector on a strategy to keep Xtend soybeans separate from varieties approved in all major export markets, said Jim Sutter, chief executive officer for the U.S. Soybean Export Council. The plan could be used if Europe does not clear imports before harvesting starts in August.

The company launched Xtend soybean seeds, engineered to resist the herbicides glyphosate and dicamba, before obtaining clearance for crop shipments to Europe because executives were expecting approval early this year.

The product is designed to replace hugely popular Roundup Ready soybeans planted nationwide and its release could represent Monsanto's biggest technology launch ever, according to the company.

But European import approval still has not come, prompting the world's top grain handlers to declare they will reject Xtend soybean deliveries to avoid trade disruptions.

"They'll obviously have to channel it so it doesn't go to the European market," Sutter said of Monsanto. He declined to offer more details.

Richard Wilkins, president of the American Soybean Association, also said Monsanto was working on a plan for Xtend soybeans if Europe's approval comes too late. The association, which represents farmers, has asked Monsanto to present the plan next month, he said.

"We are particularly interested in preventing anything from disrupting international trade," Wilkins said.

Last month, Monsanto told agricultural organizations in a letter that it hoped for European approval before summer and was not "yet in a place where harvest contingency plans are needed."

Rivals, including Syngenta AG and Dow AgroSciences , in recent years have launched programs that specify where farmers must deliver biotech crops lacking approval in key markets or how they can use the harvests domestically.

The United States is the biggest producer of GMO crops and has long been at the forefront of technology aiming to protect crops against insects or allow them to resist herbicides.

That innovation is now seen as a risk to trade because it is hard to segregate crops containing traits lacking import approvals from the billions of identical-looking bushels exported every year.

China roiled global grain trading two years ago after it rejected boatloads of U.S. corn containing a biotech Syngenta trait that had not been approved for import.

Since then, the Swiss-based seed company has partnered with grain handler Gavilon, owned by Marubeni Corp, to oversee U.S. harvests of Duracade corn, another biotech variety that lacks China's approval.

Gavilon declined to comment on Xtend soybeans.

Associations representing grain handlers and

processors, in a letter to Monsanto on May 7, asked the company's plans for Xtend soybeans if Europe does not approve imports before harvests.

Delays in the review come as soybean and soymeal prices have surged amid crop woes in Argentina, which are expected to increase demand for U.S. soy shipped to Europe.

One grain group, the National Grain and Feed Association, has told members of reports linking the timing of Europe's decision on Xtend soybean imports to the relicensing of glyphosate, sold by Monsanto and other companies.

On Monday, European nations refused to back a limited extension for the use of glyphosate.

Courtesy: Reuters

Bayer defies critics with $62 billion Monsanto offer

FRANKFURT German drugs and crop chemicals group Bayer AG has offered to buy U.S. seeds company Monsanto for $62 billion in cash, defying some of its own shareholders in a bid to grab the top spot in a fast-consolidating farm supplies industry.

Monsanto Co's stock ended trading up 4.4 percent at $106 on the New York Stock Exchange on Monday, well below Bayer's $122 per share cash offer price, in a sign that it faces a tough task convincing the St. Louis-based company to sign off on the deal.

Monsanto has said it would review the proposal. Some analysts have suggested Bayer might still have to pay more.

"The price that has now been disclosed is at the upper limit and it is just about economical. Should it rise further, which is to be assumed, the takeover will become increasingly unattractive," said Markus Manns, a fund manager at Union Investment, Bayer's 14th biggest investor

Other Bayer shareholders have also responded coldly to the company's pursuit, condemned by one Bayer investor as "arrogant empire-building" when news of the proposal emerged last week.

The unsolicited proposal would be the largest all-cash takeover on record, according to Thomson Reuters data, just ahead of InBev's $60.4 billion offer for Anheuser-Busch in June 2008.

The move would also eclipse a planned combination of peers Dow Chemical and DuPont's agriculture units and comes just three weeks after Werner Baumann took over as Bayer CEO.

Giving details for the first time, Bayer said on Monday it would offer $122 per share, a 37 percent premium to Monsanto's stock price before rumors of a bid surfaced.

"We fully expect a positive answer of the Monsanto board of directors," Baumann told reporters on a conference call, describing criticism from some investors as "an uneducated reaction in the media" when deal terms were not yet known, and driven by an element of surprise.

Monsanto, which said last week it had a received an approach from Bayer but gave no details, declined to comment.

Seven of Monsanto's top 20 investors declined to comment about Bayer's offer when contacted by Reuters. Others could not be immediately reached for comment.

Antitrust experts see an overlap in the seeds business, particularly in soybeans, cotton and canola. Bayer's LibertyLink line of weed killers, plus crops that are resistant to it, are an important alternative for farmers suffering from weeds that have grown resistant to Monsanto's Roundup herbicide.

Shares of Bayer, which had already fallen 14 percent since rumors of a bid emerged last week, ended trading down 5.7 percent on Monday to a new 2-1/2 year low of 84.42 euros.

"FULL PRICE"

Global agrochemicals companies are racing to consolidate, partly in response to a drop in commodity prices that has hit farm incomes, and also due to the growing convergence between seeds and pesticides markets.

ChemChina is buying Switzerland's Syngenta for $43 billion after Syngenta rejected a bid from Monsanto, while Dow and DuPont are forging a $130 billion business.

With German rival BASF SE also looking into a possible tie-up with Monsanto, Bayer has moved to avoid being left behind.

Baumann rejected suggestions from some investors that Bayer should instead try to forge a joint venture with Monsanto, saying this would have tax disadvantages.

Monsanto approached Bayer in March to express interest in its crop science unit, Reuters reported at the

time. Among the possibilities discussed were an outright acquisition of the crop science unit and a joint venture, or other type of partnership between the two companies.

Sources close to the matter have said BASF is unlikely to start a bidding war with Bayer. BASF declined to comment on Monday.

But analysts say Bayer might still have to pay more to persuade Monsanto and its shareholders to sell up.

That could be a problem, with some saying Bayer's proposal, at 15.8 times Monsanto's earnings before interest, tax, depreciation and amortization (EBITDA) for the year ended Feb. 29, is already a stretch for the German company.

Berenberg analyst John Klein said Monsanto and its shareholders were likely to argue that based on 2017 EBITDA expectations, the bid would represent a multiple of only 14 times, compared with the nearly 16 times ChemChina agreed to pay for Syngenta When pressed by analysts whether Bayer might sweeten its bid, Baumann said the offer reflected Monsanto's value.

"We are putting forward a very, very full price," he said.

AMBITIOUS SYNERGIES

Bayer said it would finance the bid with a combination of debt and equity, primarily a share sale to existing investors. Equity would account for about a quarter of the deal value.

Equinet analyst Marietta Miemietz, who has a 'buy' rating on Bayer stock, said the extra debt appeared manageable but could limit Bayer's ability to invest in its healthcare business, which some analysts think needs a boost to its drugs pipeline.

Baumann said Bayer would continue to develop its healthcare arm, which includes stroke prevention pill Xarelto and aspirin, the painkiller it invented more than a century ago.

"We are not feeding Peter by starving Paul here," he said, adding no asset sales were planned to help pay for the deal.

Bayer also forecast synergies from a deal with Monsanto would boost annual earnings by around $1.5 billion after three years, plus additional future benefits from integrated product offerings - a reference to its push to combine the development and sale of seeds and crop protection chemicals.

Berenberg analysts, who have a 'buy' rating on Bayer shares, described the synergies estimate as "very ambitious".

Courtesy: Commodities

'VEGETABLE OIL INDUSTRY - CHALLENGES AHEAD'

Dr. M. K. KUNDU
M.Tech, D.Sc, FABI (USA),
Consultant, Formerly Edible Oils Commissioner, GOI
Member (Scientific Panel), FSSAI, GOI

Year 2006 has been the landmark year in the sense that it is in this year that the Food Safety and Standards Act, a mandatory activity of enforcement came into existence. The Act has been instrumental in bringing about paradigm shift in the approach of the Industry towards quality and consumer safety. The Food Safety Regulation recognises that safety can be compromised not only at the manufacturing stage but also at any link in the whole food chain, starting from farm to fork. Each link in the Food chain has to be held accountable for following safety practices which involve risk assessment based on scientific evidences, identification of critical points where possibility of contamination is there and parameters to be checked need to be specified. Unlike in the past, the concept is to hold the manufacturer responsible for safety through documented safety measures rather than simply taking samples from the market and prosecuting. Further, the contamination is defined so as to distinguish between deliberate and unintentional acts or as part of the normal process of manufacture or migration from ingredients so that responsibility can be fixed accordingly. The present Act basically aims to decriminalise the offence. Towards this end, the Act incorporates a graded penalty (financial), depending upon the nature of offences, except in extreme cases

In this age of globalisation and technological advances, the essential requirements are the modernisation of the Oil industry and assurance of quality and safety of the products. Each manufacturer has to be involved in the quality and safety of his product (s), not dependent on the inspector to establish quality and safety, if he has to stay in the market, domestically as also internationally. The objective should be to build products safety as an integral part of how a product is manufactured, processed, handled, sold as also reaches the fork level

Indian Oil Industry in general range from modern, state-of-the-art factories in the organised sector to small units virtually dependent on obsolete technologies /traditional practices in the unorganised sector. The size and scalability of the manufacturing units also widely vary. The oil industry is mostly dominated by units in the unorganised sector

There is also excessive presence of middle men both in terms of sourcing of commodities as also distribution of finished products. Thus there is attendant increase in the risk of exposure to unhygienic environment, contamination and adulteration

There are a no. of other areas where the Industry faces challenges. It has to address the challenges adequately in order to be able to be globally competitive. Some of the challenges are :

1) Upgradation of Laboratories.

There is need for a review of the existing position, Laboratories which could be upgraded so as to enable proper testing and to what extent the existing Labs need to be upgraded and new facilities to be created

2) Strengthening Infrastructure of Labs for Testing

There have been concerns over microbiological contaminants, namely food and water - borne diseases, diarrhoeal diseases, mycotoxins, natural toxins, pesticides residues etc

Compliance with international standards and export inspection requirements have become mandatory prerequisites to achieving global competitiveness in terms of quality and acceptability of the products

Unfortunately, for a country of around 1.3 billion population the current level of infrastructure for referral services, development of standards and equipments are totally inadequate

Most of the labs lack world class facilities and infrastructure. Many labs are not equipped with basic facilities such as testing for heavy metal contamination and other toxic contaminants. Further testing manuals do not properly prescribe parameters and procedures. The lack of clarity on specific requirements often results in rejection at the point of export /import

3). Development of Simple Test Kits

It is a bitter fact that despite a no.of measures taken by the Govt, there is no evidence that the incidence of adulteration or marketing of substandard products has declined to any significant extent.

Adulteration of Food, per se, is not a static phenomenon. It is a dynamic one which changes continuously, depending upon the cost of the material and many other factors. There is a need to improve the existing methods, innovate newer ones for reliability, ease of operation and cost of analysi.

It is necessary to promote consumer awareness so as to ensure availability of safe and wholesome products at reasonable prices. For this purpose, simple tests which are indicative and reliable, quick, easy and cost-effective are essential. Test Kits are valuable in such situations

4) Establishment of R&D Centre

There are rapid advances in technological developments in all areas of Science including analytical areas. In order to be able to keep abreast of the technological developments to be able to remain globally competitive, it is important to establish R&D Centres by the manufacturing units to the extent possible as also by the Industry Associations. All units, particularly in the small scale sectors may not be in a position to set up R&D Centre. They may be allowed access to the analytical facilities as also facility of carrying out R&D projects as and when required, at concessional rates. Even non-members may be allowed the facilities at rates attractive enough. This way, while doing a service to the manufacturing units, R&D Centres could prove to be profit centres for the Associations also

5) Need for Regular Training Program

There is a need for regular training program to be conducted for all those involved in /associated with the implementation of the food safety measures so as to keep them aware of the changes /developments in this area. In addition to normal training, training on GMP, GHP, HACCP is considered necessary so as to keep the concerned personnel aware of the latest developments in the area.

Tiny, small and medium scale industries do not have the resources /technical expertise to track the regulatory changes. It is important to design special training programme for them to be able to update the products and processes and thus be able to comply with specified quality /hygiene standards

6) Need for a Data Bank

There is need for compilation of information. about. national and internationally recognised. . standards that are available, dietary issues, nutritional status of population particularly of vulnerable groups (children, pregnant women etc), benchmark surveys and studies available

Very little data are available on the effect of exposure of population including vulnerable groups. to chemical contaminants, cumulative low level exposure to multiple contaminants, emerging safety hazards namely microbiological contaminants and new technologies (irradiation, genetic engineering)

7) Global Consensus on Products Safety

Liberalisation of trade resulting in movement of products (oils included) across the borders has increased the health concerns . There have been changes in food consumption and preferences, which have led to changes in the occurrence of food pathogens as well as mycotoxins and have raised emerging problems of food safety and nutrition as well as food security, As a result, global action across borders to ensure food safety as integral to food and nutrition security has become more important than ever before

8) Funding

This is another vital area. In so far as India is concerned, GOI is making efforts to fund various programs. For a vast country like ours, fund requirements are much higher. All stakeholders must join hands in contributing to the efforts of the Government

Some of the areas of challenges would need technological cooperation with countries who have the relevant technologies. It makes no sense in wasting public money and valuable time in trying to reinvent what are already available elsewhere

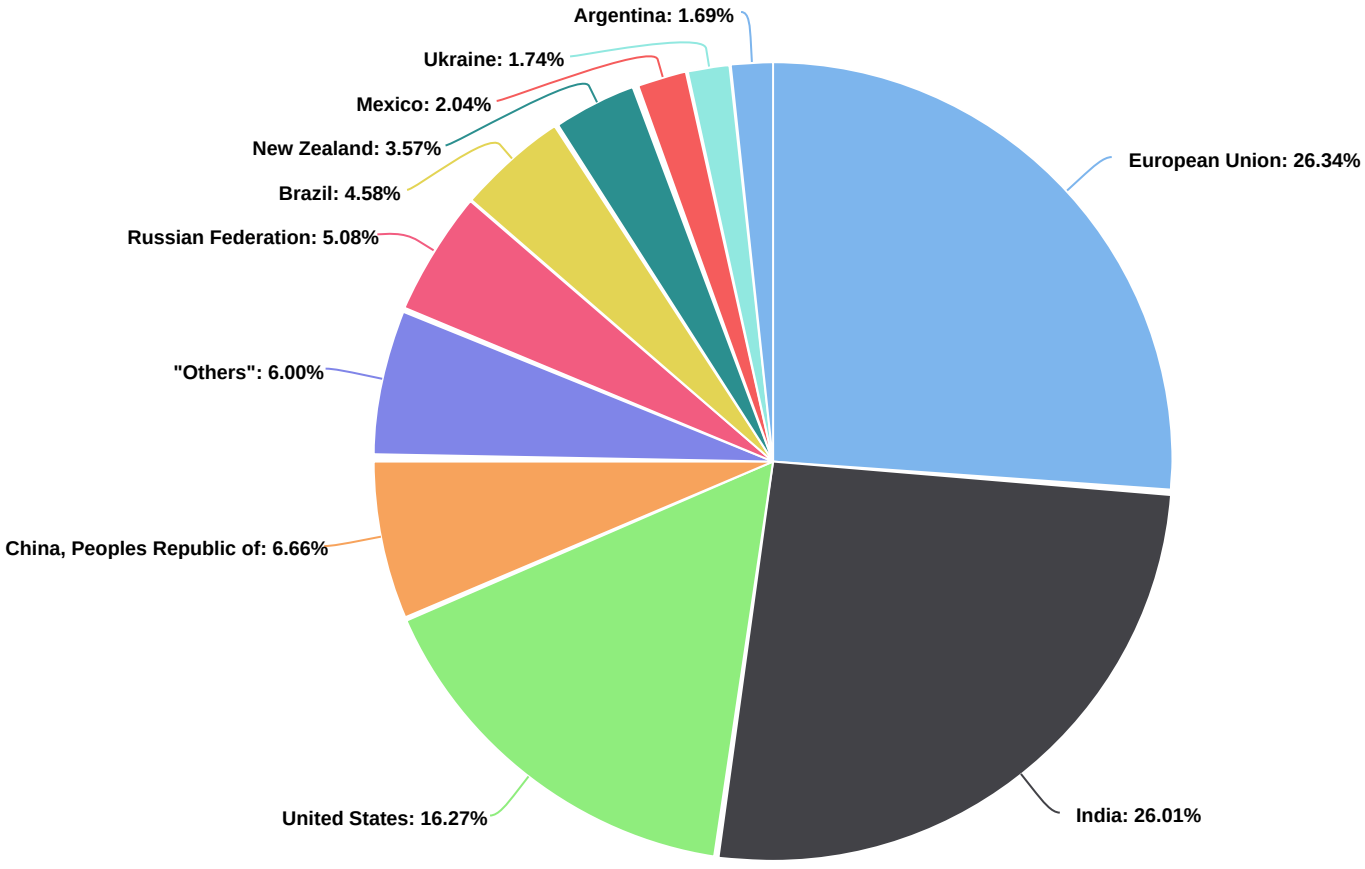
Finally, encouraging self-compliance is an accepted practice in most of the developed countries. Serious efforts need to be made for introduction of industry self-regulation as also joint regulation with the industry. Approach should be positive, based on trust. It could be reasonably expected to go a long way in reducing litigation, faster approvals as well as better compliance on the part of the industry. Self-compliance will also incentivise industry to go for innovation

Important Figures

Dairy, Milk Fluid, World Production, in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	592,058	+9,050 (+1.55%)	583,008	570,719
Imports	1,276	+251 (+24.48%)	1,025	961
Total Supply	593,334	+9,301 (+1.59%)	584,033	571,680
Exports	1,677	+103 (+6.54%)	1,574	1,354
Domestic Consumption	591,657	+9,198 (+1.57%)	582,459	570,326
Feed Use Dom. Consum.	5,055	-241 (-4.55%)	5,296	5,531
Total Distribution	593,334	+9,301 (+1.59%)	584,033	571,680
Cows In Milk	141,707	+2,131 (+1.52%)	139,576	137,610
Cows Milk Production	499,807	+6,118 (+1.23%)	493,689	484,329
Factory Use Consum.	404,310	+7,286 (+1.83%)	397,024	387,302
Fluid Use Dom. Consum.	182,292	+2,153 (+1.19%)	180,139	177,493
Other Milk Production	92,251	+2,932 (+3.28%)	89,319	86,390

Dairy, Milk Fluid, World Production, Main Countries in 2016/2017 MY 1000 MT



Dairy, Milk Fluid, World Production, Main Countries in 2016/2017 MY 1000 MT

#	Country	2016/2017 Jul '16	2015/2016	2014/2015	2013/2014
1	European Union155,950	153,950	150,850	144,850	
2	India	154,000	147,000	140,500	134,500
3	United States	96,343	94,620	93,485	91,277
4	China, Peoples Republic of	39,450	39,050	38,800	35,750
5	Russian Federation	30,085	30,550	30,499	30,529
6	Brazil	27,100	26,300	25,489	24,259
7	New Zealand	21,150	21,582	21,893	20,200
8	Mexico	12,100	11,900	11,624	11,451
9	Ukraine	10,330	10,950	11,426	11,488
10	Argentina	10,000	11,552	11,326	11,519
11	Australia	9,700	9,800	9,700	9,400
12	Canada	8,685	8,682	8,437	8,443
13	Japan	7,340	7,375	7,334	7,508
14	Belarus	7,212	7,084	6,740	6,670
15	Korea, Republic of	2,193	2,200	2,214	2,093
16	Taiwan	395	389	379	374
17	Philippines	25	24	23	22

Dairy, Milk Fluid, World Production, European Union in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	155,950	+2,000 (+1.29%)	153,950	150,850
Imports	3	0.0 (0.0%)	3	10
Total Supply	155,953	+2,000 (+1.29%)	153,953	150,860
Exports	720	+11 (+1.55%)	709	560
Domestic Consumption	155,233	+1,989 (+1.29%)	153,244	150,300
Total Distribution	155,953	+2,000 (+1.29%)	153,953	150,860
Cows In Milk	23,624	+65 (+0.27%)	23,559	23,468
Cows Milk Production	151,600	+2,000 (+1.33%)	149,600	146,500
Factory Use Consum.	121,233	+1,989 (+1.66%)	119,244	116,234
Fluid Use Dom. Consum.	34,000	0.0 (0.0%)	34,000	34,066
Other Milk Production	4,350	0.0 (0.0%)	4,350	4,350

Dairy, Milk Fluid, World Production, India in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	154,000	+7,000 (+4.76%)	147,000	140,500
Total Supply	154,000	+7,000 (+4.76%)	147,000	140,500
Exports	-	-	-	-
Domestic Consumption	154,000	+7,000 (+4.76%)	147,000	140,500
Total Distribution	154,000	+7,000 (+4.76%)	147,000	140,500
Cows In Milk	54,500	+2,000 (+3.80%)	52,500	50,500
Cows Milk Production	68,000	+4,000 (+6.25%)	64,000	60,500
Factory Use Consum.	91,250	+4,000 (+4.58%)	87,250	83,500
Fluid Use Dom. Consum.	62,750	+3,000 (+5.02%)	59,750	57,000
Other Milk Production	86,000	+3,000 (+3.61%)	83,000	80,000

Dairy, Milk Fluid, World Production, USA in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	96,343	+1,723 (+1.82%)	94,620	93,485
Imports	2	-1 (-33.33%)	3	4
Total Supply	96,345	+1,722 (+1.81%)	94,623	93,489
Exports	85	-7 (-7.60%)	92	93
Domestic Consumption	96,260	+1,729 (+1.82%)	94,531	93,396
Feed Use Dom. Consum.	441	+1 (+0.22%)	440	437
Total Distribution	96,345	+1,722 (+1.81%)	94,623	93,489
Cows In Milk	9,320	+3 (+0.03%)	9,317	9,257
Cows Milk Production	96,343	+1,723 (+1.82%)	94,620	93,485
Factory Use Consum.	69,298	+1,996 (+2.96%)	67,302	65,899
Fluid Use Dom. Consum.	26,521	-268 (-1.00%)	26,789	27,060

Dairy, Milk Fluid, World Production, China, Peoples Republic of. in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	39,450	+400 (+1.02%)	39,050	38,800
Imports	650	+190 (+41.30%)	460	320
Total Supply	40,100	+590 (+1.49%)	39,510	39,120
Exports	25	0.0 (0.0%)	25	26
Domestic Consumption	40,075	+590 (+1.49%)	39,485	39,094
Feed Use Dom. Consum.	-	-	-	-
Total Distribution	40,100	+590 (+1.49%)	39,510	39,120
Cows In Milk	8,500	+100 (+1.19%)	8,400	8,400
Cows Milk Production	38,000	+450 (+1.19%)	37,550	37,250
Factory Use Consum.	24,505	+380 (+1.57%)	24,125	23,944
Fluid Use Dom. Consum.	15,570	+210 (+1.36%)	15,360	15,150
Other Milk Production	1,450	-50 (-3.33%)	1,500	1,550

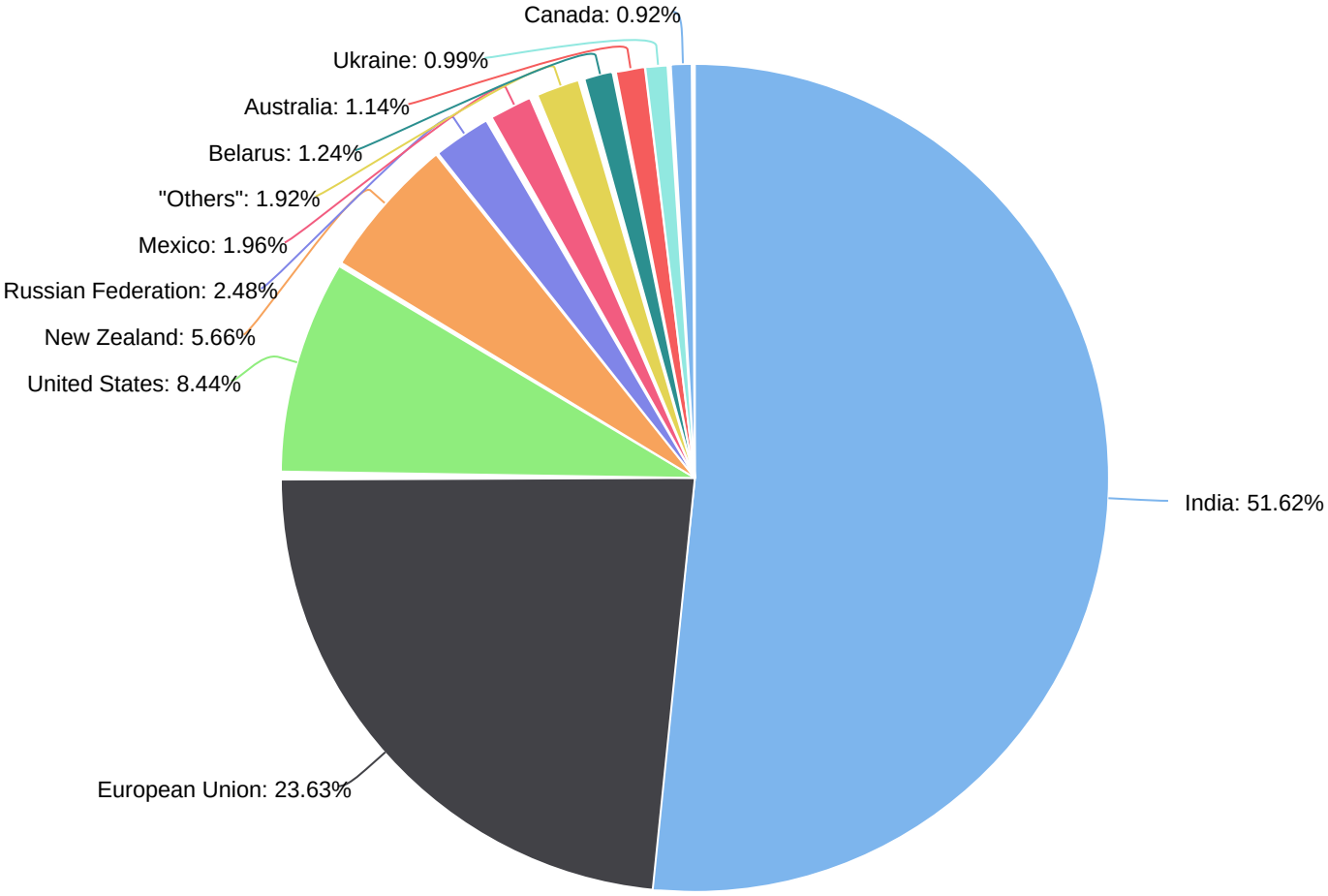
Dairy, Milk Fluid, World Production, Russian Federation. in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	30,085	-465 (-1.52%)	30,550	30,499
Imports	320	-8 (-2.43%)	328	383
Total Supply	30,405	-473 (-1.53%)	30,878	30,882
Exports	20	-22 (-52.38%)	42	20
Domestic Consumption	30,385	-451 (-1.46%)	30,836	30,862
Feed Use Dom. Consum.	2,000	-196 (-8.92%)	2,196	2,268
Total Distribution	30,405	-473 (-1.53%)	30,878	30,882
Cows In Milk	7,550	-200 (-2.58%)	7,750	8,050
Cows Milk Production	30,085	-465 (-1.52%)	30,550	30,499
Factory Use Consum.	19,200	+60 (+0.31%)	19,140	18,735
Fluid Use Dom. Consum.	9,185	-315 (-3.31%)	9,500	9,859

Dairy, Butter, World Production, in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	10,073	+193 (+1.95%)	9,880	9,634
Beginning Stocks	328	+74 (+29.13%)	254	231
Imports	314	+32 (+11.34%)	282	329
Total Supply	10,715	+299 (+2.87%)	10,416	10,194
Exports	965	+57 (+6.27%)	908	920
Domestic Consumption	9,404	+224 (+2.44%)	9,180	9,020
Total Use	10,369	+281 (+2.78%)	10,088	9,940
Total Distribution	10,715	+299 (+2.87%)	10,416	10,194
Ending Stocks	346	+18 (+5.48%)	328	254

Dairy, Butter, World Production, Main Countries in 2016/2017 MY 1000 MT



Dairy, Butter, World Production, Main Countries in 2016/2017 MY 1000 MT

#	Country	2016/2017 Jul '16	2015/2016	2014/2015	2013/2014
1	India	5,200	5,035	4,887	4,745
2	European Union	2,380	2,335	2,250	2,100
3	United States	850	843	842	845
4	New Zealand	570	575	580	535
5	Russian Federation	250	260	252	219
6	Mexico	197	195	192	190
7	Belarus	125	120	105	99
8	Australia	115	120	125	117
9	Ukraine	100	105	115	93
10	Canada	93	91	88	95
11	Brazil	88	87	85	83
12	Japan	63	64	61	68
13	Argentina	42	50	52	60

Dairy, Butter, Production, India in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	5,200	+165 (+3.27%)	5,035	4,887
Beginning Stocks	8	0.0 (0.0%)	8	6
Imports	1	0.0 (0.0%)	1	1
Total Supply	5,209	+165 (+3.27%)	5,044	4,894
Exports	10	0.0 (0.0%)	10	10
Domestic Consumption	5,190	+164 (+3.26%)	5,026	4,876
Total Use	5,200	+164 (+3.25%)	5,036	4,886
Total Distribution	5,209	+165 (+3.27%)	5,044	4,894
Ending Stocks	9	+1 (+12.50%)	8	8

Dairy, Butter, Production, European Union in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	2,380	+45 (+1.92%)	2,335	2,250
Beginning Stocks	51	+29 (+131.81%)	22	24
Imports	20	-7 (-25.92%)	27	52
Total Supply	2,451	+67 (+2.81%)	2,384	2,326
Exports	240	+48 (+25.00%)	192	142
Domestic Consumption	2,151	+10 (+0.46%)	2,141	2,162
Total Use	2,391	+58 (+2.48%)	2,333	2,304
Total Distribution	2,451	+67 (+2.81%)	2,384	2,326
Ending Stocks	60	+9 (+17.64%)	51	22

Dairy, Butter, Production, USA in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	850	+7 (+0.83%)	843	842
Beginning Stocks	70	+23 (+48.93%)	47	51
Imports	54	+15 (+38.46%)	39	22
Total Supply	974	+45 (+4.84%)	929	915
Exports	22	-1 (-4.34%)	23	74
Domestic Consumption	879	+43 (+5.14%)	836	794
Total Use	901	+42 (+4.88%)	859	868
Total Distribution	974	+45 (+4.84%)	929	915
Ending Stocks	73	+3 (+4.28%)	70	47

Dairy, Butter, Production, New Zealand in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	570	-5 (-0.86%)	575	580
Beginning Stocks	63	+6 (+10.52%)	57	54
Imports	1	0.0 (0.0%)	1	1
Total Supply	634	+1 (+0.15%)	633	635
Exports	550	+2 (+0.36%)	548	556
Domestic Consumption	22	0.0 (0.0%)	22	22
Total Use	572	+2 (+0.35%)	570	578
Total Distribution	634	+1 (+0.15%)	633	635
Ending Stocks	62	-1 (-1.58%)	63	57

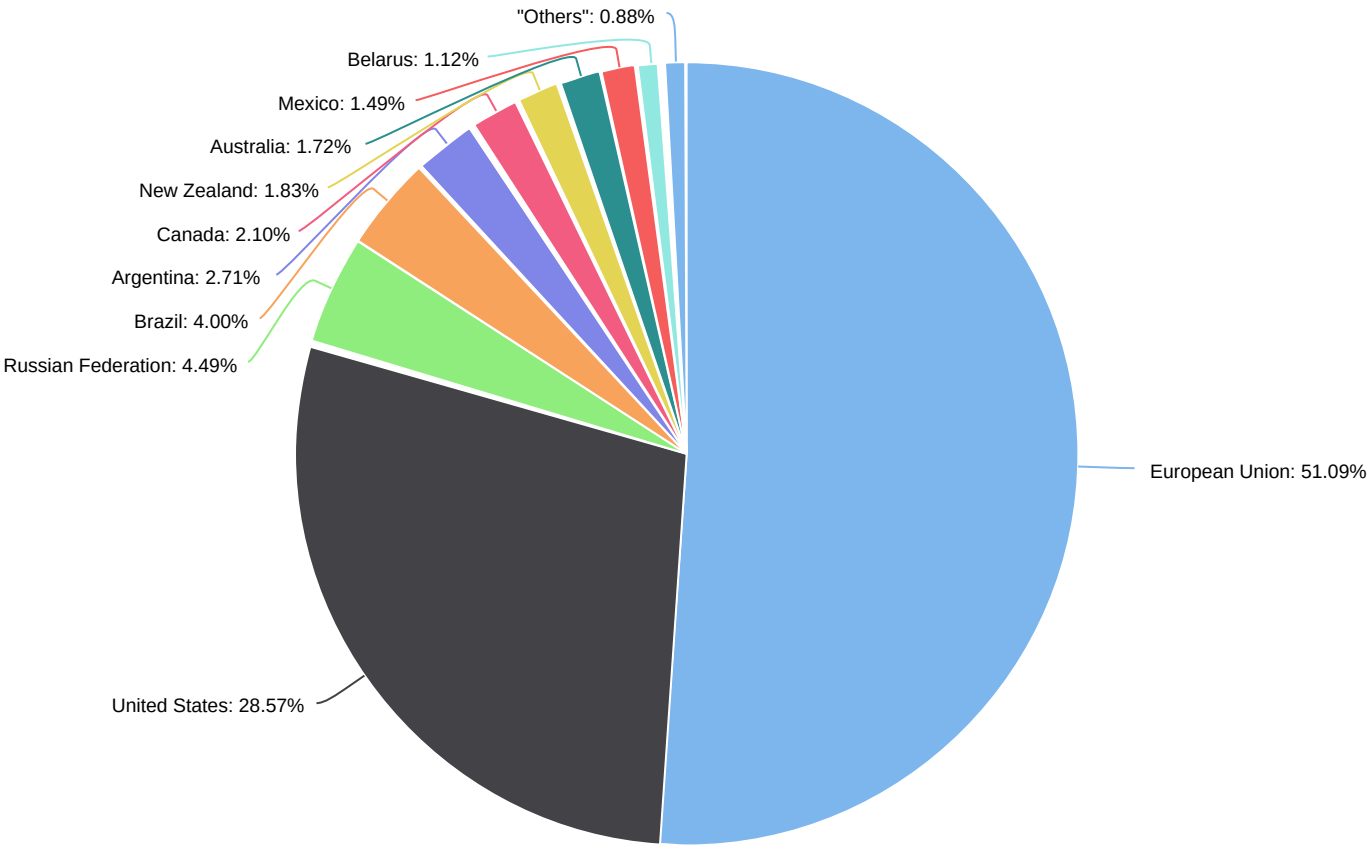
Dairy, Butter, Production, Russian Federation in 2016/2017 MY 1000 MT
Dairy, Butter. Russian Federation. 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	250	-10 (-3.84%)	260	252
Beginning Stocks	14	-5 (-26.31%)	19	10
Imports	100	+12 (+13.63%)	88	137
Total Supply	364	-3 (-0.81%)	367	399
Exports	3	0.0 (0.0%)	3	4
Domestic Consumption	351	+1 (+0.28%)	350	376
Total Use	354	+1 (+0.28%)	353	380
Total Distribution	364	-3 (-0.81%)	367	399
Ending Stocks	10	-4 (-28.57%)	14	19

Dairy, Cheese, World Production, in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	19,161	+229 (+1.20%)	18,932	18,508
Beginning Stocks	808	+56 (+7.44%)	752	678
Imports	1,187	+68 (+6.07%)	1,119	1,185
Total Supply	21,156	+353 (+1.69%)	20,803	20,371
Exports	1,878	+68 (+3.75%)	1,810	1,809
Domestic Consumption	18,485	+300 (+1.64%)	18,185	17,810
Total Use	20,363	+368 (+1.84%)	19,995	19,619
Total Distribution	21,156	+353 (+1.69%)	20,803	20,371
Ending Stocks	793	-15 (-1.85%)	808	752

Dairy, Cheese, World Production, Main countries in 2016/2017 MY 1000 MT



Dairy, Cheese, World Production, Main countries in 2016/2017 MY 1000 MT

#	Country	2016/2017 Jul '16	2015/2016	2014/2015	2013/2014
1	European Union	9,790	9,690	9,560	9,368
2	United States	5,475	5,370	5,222	5,036
3	Russian Federation	860	861	760	713
4	Brazil	766	751	736	722
5	Argentina	520	548	564	556
6	Canada	402	400	396	388
7	New Zealand	350	355	325	311
8	Australia	330	324	320	320
9	Mexico	285	280	275	270
10	Belarus	215	185	174	140
11	Ukraine	100	100	104	140
12	Japan	42	42	46	49
13	Korea, Republic of	24	24	24	22
14	Philippines	2	2	2	2

Dairy, Cheese, Production, European Union in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	9,790	+100 (+1.03%)	9,690	9,560
Beginning Stocks	27	-5 (-15.62%)	32	-
Imports	65	+4 (+6.55%)	61	76
Total Supply	9,882	+99 (+1.01%)	9,783	9,636
Exports	790	+71 (+9.87%)	719	721
Domestic Consumption	9,062	+25 (+0.27%)	9,037	8,883
Total Use	9,852	+96 (+0.98%)	9,756	9,604
Total Distribution	9,882	+99 (+1.01%)	9,783	9,636
Ending Stocks	30	+3 (+11.11%)	27	32

Dairy, Cheese, Production, USA in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	5,475	+105 (+1.95%)	5,370	5,222
Beginning Stocks	520	+58 (+12.55%)	462	458
Imports	168	+11 (+7.00%)	157	127
Total Supply	6,163	+174 (+2.90%)	5,989	5,807
Exports	275	-42 (-13.24%)	317	368
Domestic Consumption	5,366	+214 (+4.15%)	5,152	4,977
Total Use	5,641	+172 (+3.14%)	5,469	5,345
Total Distribution	6,163	+174 (+2.90%)	5,989	5,807
Ending Stocks	522	+2 (+0.38%)	520	462

Dairy, Cheese, Production, Russian Federation in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	860	-1 (-0.11%)	861	760
Beginning Stocks	35	+5 (+16.66%)	30	22
Imports	235	+21 (+9.81%)	214	349
Total Supply	1,130	+25 (+2.26%)	1,105	1,131
Exports	25	+2 (+8.69%)	23	29
Domestic Consumption	1,075	+28 (+2.67%)	1,047	1,072
Total Use	1,100	+30 (+2.80%)	1,070	1,101
Total Distribution	1,130	+25 (+2.26%)	1,105	1,131
Ending Stocks	30	-5 (-14.28%)	35	30

Dairy, Cheese, Production, Brazil in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	766	+15 (+1.99%)	751	736
Beginning Stocks	-	-	-	-
Imports	20	-1 (-4.76%)	21	21
Total Supply	786	+14 (+1.81%)	772	757
Exports	3	0.0 (0.0%)	3	3
Domestic Consumption	783	+14 (+1.82%)	769	754
Total Use	786	+14 (+1.81%)	772	757
Total Distribution	786	+14 (+1.81%)	772	757
Ending Stocks	-	-	-	-

Dairy, Cheese, Production, Argentina in 2016/2017 MY 1000 MT

Attribute	2016/2017 Jul '16	Year Change	2015/2016	2014/2015
Production	520	-28 (-5.10%)	548	564
Beginning Stocks	40	0.0 (0.0%)	40	39
Imports	2	+1 (+100.00%)	1	3
Total Supply	562	-27 (-4.58%)	589	606
Exports	45	+2 (+4.65%)	43	56
Domestic Consumption	495	-11 (-2.17%)	506	510
Total Use	540	-9 (-1.63%)	549	566
Total Distribution	562	-27 (-4.58%)	589	606
Ending Stocks	22	-18 (-45.00%)	40	40

Health Tips

Heart-Healthy Benefits of Vegetable Oil Confirmed; Researchers Suggest Up To Four Tablespoons A Day

A once questionable cooking product, vegetable oil can now be considered a diet-friendly source of beneficial nutrients, according to a new study. Pure vegetable oil was found to be the healthiest kind of oil, one that should be incorporated into our daily diets. Researchers from the University of Missouri and the University of Illinois are now confirming that a heart-healthy diet can be achieved by consuming soybean, canola, corn, and sunflower oils, instead of cooking with animal-based fats.

Vegetable oils do account for a significant source of calories, but they are also rich in linoleic acid (LA), an essential nutrient that can help lower the risk of heart disease. Recently, among experts, there has been controversy surrounding the suggested quantity of LA, claiming that Americans could be consuming too much of a good thing. The typical American consumes approximately three or more tablespoons of vegetable oil each day, and the newest study, "Effect of Dietary Linoleic Acid on Markers of Inflammation in Healthy Persons: A systematic Review of Randomized Controlled Trials," approves of that quantity.

Vegetables oils are easier to digest and help the body preserve important vitamins and natural properties of olives. According to the American Heart Association, they aid in lowering low-density lipoprotein (LDL), which is known as "bad" cholesterol levels, while raising high-density lipoprotein (HDL), also known as the "good" cholesterol. These two different types of lipids, along with triglycerides, which is another form of fat made in the body, and a genetic variation of LDL known as LP(a), all make up an individual's total cholesterol count.

This is not to be confused with hydrogenated vegetable oils, such as shortening or margarine, which, when consumed in large and frequent quantities, can easily become a negative contributor to an otherwise healthy diet. When vegetable oil is hydrogenated, it is chemically altered from a liquid to a solid state, which in turn changes natural and healthy fatty acids into unwanted trans fatty acids. In fact, trans fatty acids can lead to heart disease, clogged arteries, heart attack, or stroke. They are neither easily digestible nor advantageous to include in any diet.

"Consumers are regularly bombarded with warnings about what foods they should avoid," University of Missouri researcher Kevin Fritzsche said. "While limiting the overall fat intake is also part of the current nutrition recommendations, we hope people will feel comfortable cooking with vegetable oils."

Given that linoleic acid is a major component of vegetable oils, researchers tested vegetable oil consumption in nearly 500 adults to understand the effect it would have on their bodies. After 15 reviewed clinical trials of a diet high in linoleic acid (between two to four tablespoons), no links to inflammation of the body were found.

Those who struggle with high cholesterol or heart disease in their family should evaluate and consider revising their diets. Replacing margarine or butter with vegetable oil can be a step towards a healthier life. According to the Centers for Disease Control and Prevention (CDC), a healthy and desirable total cholesterol level is less than 200 mg/dL (milligrams per deciliter). People with a high total cholesterol level run twice the risk of heart disease compared to those with healthy cholesterol levels.

Approximately 71 million Americans, or 33.5 percent of the total population, have high LDL levels. When too much LDL circulates in the blood, fat can slowly build up along the inner walls. Eventually a blood clot will form if the levels are maintained or increased to high levels. The fat that forms is a thick, hard plaque deposit, and results in a condition called atherosclerosis, which can lead to a heart attack or stroke. Cholesterol levels can be checked with a blood screening. According to the CDC, 96 million doctor visits included a cholesterol test in 2009; however that only accounted for 9.2 percent of all visits.

Linoleic acid is an omega-6 fatty acid, commonly found in almonds and Alaskan salmon. Omega-6 plays an vital role in cell growth that triggers immune responses, and encourages brain and muscle development, which explains why it is a sought-after nutrient for top athletes and body builders. However, like overall vegetable oil consumption, it is only healthy in moderation. Researchers suggest up to four tablespoons of vegetable oil daily are within a healthy range.

"We're not saying that you should just go out and consume vegetable oil freely," Fritzsche said.

Courtesy : Medical Daily

Are Olive seeds the new super food?

Spanish olive company Grupo Olayo is pioneering new uses for previously discarded olive by products by extracting seeds from olive pits using special optical sorting technology, for possible pharmaceutical, food and cosmetic applications.

The company, based in Spain's Jaèn region, was founded just five years ago by engineer and economist Josè Maria Olmo Peinado, who has years of experience in the industry. With olive seeds being found to contain impressive antioxidant and polyphenol qualities, Peinado hopes it could be the next big super food to hit the market.

According to Raschid Stoffel, Grupo Elayo's Business Development Director, the decision to research the use of olive seeds began through the company's experience in olive farming in general.

While they primarily produce olive oils and olive oil pearls (or caviar), the vision of the company is to turn tradition into innovation by developing a greater understanding of the olive tree as a whole and the sector processes involved in production. The company explores by products of the traditional olive oil extraction process, including its skins, pits and more.

In particular, olive seeds caught the eye of Grupo Elayo researchers, as they contain high concentrations of polyphenols and antioxidants, with an additionally high level of quality dietary fiber.

In order to access the seeds within the pits (and its sought after bioactive components), the seeds undergo a rigorous cleaning and sorting process, which is facilitated by a partnering company called Buhler Sortex. This company offers optical sorting solutions, which are necessary to sort seeds from pits and its fragments on a large scale, as the color difference between the two is invisible to the naked eye.

Firstly, the pits are broken and conveyed to a sorting machine. Then an InGaAs (Indium Gallium Arsenide) camera uses a Short-Wavelength Infrared Range (SWIR) to detect the color differences between seeds, pits and fragments.

Only 25 tons of olives are needed to extract 1,250 kg of seeds, with less than one percent getting lost in the process, making it a highly viable and productive alternative to discarding olive pits as waste.

According to Stoffel, Grupo Elayo's primary product concern is the olive seed, from which olive seed flour and olive seed oil are obtained after a pressing process.

The seed itself can be consumed as a topping for both sweet and savory baked goods, used in bread dough and even toasted and caramelized to create an unusual and healthy ice cream or chocolate topping.

The flour can used in place of normal flour or as a healthier breading for meats and potatoes or topping for salads, and the seed oil can be used as an even healthier alternative to conventional olive oil, and as an ingredient in soaps, creams and more, he said.

"Corazón de Oliva oil (olive oil heart) is an oil rich in oleic acid and linoleic acid, which stands out for its high content of bioactive compounds," the company's website claims, "among which are phenolic compounds and squalene which have been shown to have beneficial effects on health, prevention and treatment of different diseases."

Courtesy: Olive oil Times

Some people may be genetically programmed to be vegetarians

Why is it that some people can stay healthy only by sticking to a strict vegetarian diet? Why is it that others can eat a steak a day, remain slim, avoid heart disease and feel like a million dollars? The answers may lie in your heritage.

Cornell University researchers have found a fascinating genetic variation that they said appears to have evolved in populations that favored vegetarian diets over hundreds of generations. The geography of the vegetarian allele - an allele is a variant form of a gene - is vast and includes people from India, Africa and parts of East Asia who are known to have green diets even today.

Researcher Kaixiong Ye said that the vegetarian adaptation allows people to "efficiently process omega-3 and omega-6 fatty acids and convert them into compounds essential for early brain development."

Omega-3 is found in fish, whole grains, olive oil, fruits and vegetables, while omega-6 is found in beef, pork products and many packaged snack foods such as cookies, candies, cakes and chips, as well as in nuts and vegetable oils.

Nutritionists believe that getting a good balance of these two types of fatty acids in the diet is essential to staying healthy. The body can't produce these substances naturally, so it must get them from food.

Omega-3 is anti-inflammatory and helps regulate metabolism, which affects a wide range of functions in the body. In recent years, supplements rich in omega-3 have been trendy, based on the idea that it may reduce risk of heart disease. (The Food and Drug Administration says the evidence supports this theory but isn't conclusive.) Omega-6 contributes to inflammation and plays an important role in skin and hair growth, bone health and reproductive health. Inflammatory responses are essential to our survival. They help fight off infections and protect us from injury. But if the response is excessive, it can lead to all kinds of problems and may contribute to a higher risk of heart disease, cancer and Alzheimer's disease.

Studies have suggested that humans evolved on a diet with a ratio of omega-6 to omega-3 essential fatty acids of 1:1 but that the Western diet has a ratio that is closer to 15 or 16:1. The Mediterranean diet, in contrast, is closer to having an equal balance of the two and is

recommended by many doctors.

But this new study, funded by the National Institutes of Health and the U.S. Department of Agriculture, shows that different people may need radically different ratios of the substances in their diet depending on their genes, and it supports the growing evidence against a one-size-fits-all approach to nutrition and for highly personalized advice.

The existence of the vegetarian allele implies that, for people with this variation, straying from that diet - by eating a lot of red meat, for example - may make them more susceptible to inflammation, because their bodies were optimized for a different mix of inputs.

The research, published Wednesday in the journal Molecular Biology and Evolution, involved two parts. The scientists first analyzed the frequencies of the vegetarian allele in 234 primarily vegetarian Indians and 311 Americans living today. They found the vegetarian allele in 68 percent of the Indians and 18 percent of the Americans. Then they analyzed information from the 1,000 Genomes Project - a database of global DNA - to calculate an estimate of the frequency of the vegetarian allele in far-flung populations around the world. The differences were striking: 70 percent of South Asians, 53 percent of Africans, 29 percent of East Asians and 17 percent of Europeans had the gene variation.

Now here's where their work gets even more interesting. Ye and colleagues found a different version of that gene adapted to a marine diet, rich in seafood, among the Inuit people in Greenland. Technically speaking, it's the "opposite" of the vegetarian allele. The vegetarian allele has an insertion of 22 "bases," or a building block of DNA, and this insertion was deleted in the marine allele.

Ye, who is the lead co-author along with Kumar Kothapalli, a senior research associate in nutritional sciences, theorized that having the vegetarian allele "might have been detrimental" for the Inuit because of their seafood-rich diets.

The vegetarian and marine alleles appear to control the FADS1 and FADS2 enzymes in the body, which are critical to converting omega-3 and omega-6 fatty acids into what the researchers called "downstream products" needed for brain development and controlling inflammation. People who eat meat and seafood need less of the FADS1 and FADS2 enzymes to get sufficient nutrition. "Their omega-3 and omega-6 fatty acid conversion process is simpler and requires fewer steps," they noted.

Another groundbreaking study about genes and food was published in 2014 in Nature Communications. It found that a higher percentage of people in Europe - and particularly in Ireland - have variants for being lactose-tolerant, or able to break down the sugar in non-human milk.

The authors said this ability appears to have evolved from a long history of milk drinking.

Ye explained that people with this kind of gene "absorbed enough end products from milk for long-chain fatty acid metabolism so they don't have to increase capacity to synthesize those fatty acids from precursors."

There has been considerable debate and research on when - and why - these types of variants cropped up.

In the case of lactose tolerance, early research had estimated that it arose 7,000 or more years ago, when people in the region began making cheese. But the Nature study wasn't able to find it until 3,000 years back, which may imply that the populations had to rely heavily on dairy before the adaptation occurred.

Ye said the evolution of the vegetarian allele is less clear. It doesn't exist in our ape relatives the chimpanzee or orangutan, but there is some evidence it may have been there in early hominids Neanderthal and Denisovan. It seems likely, the researchers wrote, that it has to do with migration patterns and the pressures that came with the availability or lack of availability of different kinds of foods in certain environments.

Today, in a world where many people have ready access to a wide variety of foods at their local groceries, the adaptations can act more as limitations to the kinds of foods you can eat to remain healthy.

Courtesy: The Washington Post

F.D.A. Finishes Food Labels for How We Eat Now

Major changes to nutrition labels on food packages became final on Friday, with calorie counts now shown in large type and portion sizes that reflect how much Americans actually eat.

It was the first significant redrawing of the nutrition information on food labels since the federal government started requiring them in the early 1990s. Those labels were based on eating habits and nutrition data from the 1970s and ’80s and before portion sizes expanded significantly. Federal health officials argued that the changes were needed to bring labels into step with the reality of the modern American diet.

The Food and Drug Administration proposed the changes in 2014, but consumer advocates worried that many of the major elements would not survive lobbying by the powerful food industry. A number of companies vigorously opposed, for example, a separate line for added sugars. But the final rule, announced by Michelle Obama on Friday, mostly remained intact, including the line on added sugars.

“This has to be scored as a huge win,” said Marion Nestle, a professor in the department of nutrition, food

studies and public health at New York University. “The F.D.A.’s final rules confirm what the agency proposed originally on the most important elements. The big ones — calories, added sugars — survived.”

Most food manufacturers will be required to use the new label by July 2018. Producers with less than $10 million in annual food sales will have an additional year to comply.

Millions of Americans pay attention to food labels. The changes are meant to make them easier to understand — a critical step in an era when more than one-third of adults are obese, public health experts say. The epidemic has caused rates of diabetes to soar and has increased risks for cancer, heart disease and stroke. Comments from companies and trade associations seemed to reflect acceptance. The American Beverage Association said its members had already put clearer calorie counts on the front of beverage bottles as a part of Ms. Obama’s “Let’s Move!” campaign.

The revised food label, right, includes added sugars as well as emphasizing serving size and calories. (The labels are for two hypothetical products.) More information Credit F.D.A.

The Grocery Manufacturers Association, which represents food and beverage companies, said, “We look forward to working with F.D.A. and other stakeholders on messages and activities to help consumers understand what the new labels mean.”

But the sugar industry did not relent in its criticism. The Sugar Association said it was “disappointed” by the F.D.A.’s decision to require a separate line for added sugars. It argued that the rule lacked “scientific justification.”

The association said, “We are concerned that the ruling sets a dangerous precedent that is not grounded in science, and could actually deter us from our shared goal of a healthier America.”

Getting the original nutrition labels on food packages was a major battle. Dr. David Kessler, the former F.D.A. commissioner, said the fight went all the way to the Oval Office, where the first President George Bush sided with the agency in what was considered a major victory for public health.

“They got this right,” he said of the new changes in an interview on Friday. “This will affect people’s lives. It gives really important information to people who want to use it.”

It is also important for the food and beverage industry, he said. “By putting added sugars on the label, it creates incentives for industry to make healthier products, because they don’t want to look bad with all of that sugar on the label.”

Michael F. Jacobson, executive director of the Center for Science in the Public Interest, said he believed the new line for added sugars would help change behavior.

“A lot of people will be shocked to see how much sugar is in soda,” he said. “Teachers and parents will leap at that as something to show their kids.”

A 12-ounce can of Coke has 140 calories and 39 grams of sugar, which, according to Mr. Jacobson, is about the equivalent of 9.2 teaspoons. He said a shortcoming of the new rules was that companies could still express sugar in grams, not in teaspoons.

Courtesy: The New York Times

Croton Nut Oil

Croton trees have dark grey or pale brown bark and the leaves are long, oval-shaped, with a green upper surface and a pale underside. A prolific seeder, Croton trees fruit twice a year approximately five months after rains in East Africa. Croton nuts develop after the tree flowers, with mature nuts produced in varying amounts throughout the year depending on the region and elevation. Croton nuts contain three dark oblong seeds that are inedible.

A fast-growing tree, croton grows up to 36 meters high and reaches maturity after five to seven years. Croton is commonly found in forests and on rural farms as a boundary tree. It is a drought-resistant tree that can survive in harsh climatic conditions and is not browsed by animals. It is a dominant upper canopy tree with a flat crown.

Croton trees play an important role in local African ecosystems for shade, wind protection, and soil conservation. The wood from the trees makes good fuel wood and charcoal. The wood is also known for its termite resistance and is used for fence posts and poles in construction. Given their high nitrogen content, the leaves are often used for mulch.

Traditional medical uses for croton include the bark, seeds, roots and leaves being used for medicinal purposes such as stomach ailments, malaria, wound clotting, and pneumonia.

Recently, croton nuts are being used as a commercial product in local communities in East Africa. Previously a wasted resource, croton has been promoted as a local, more sustainable avenue to biofuel production in place of failed jatropha projects. The nut itself has multiple uses but most well-known is the oil, used to make biofuel or biodiesel. Byproducts from the oil include croton seedcake that can be used in animal feeds due its high protein content. The husks of the nut are processed into fertilizer or as a biomass.

Croton seeds contain approximately 30% oil and a high protein content of 30%.Croton nut oil (CNO) has been promoted for its perceived benefits in combating climate change, greenhouse gas emissions and dependence on fossil fuels. Compared to diesel, CNO is self-lubricating and has a higher flash point making it safer and causes lower exhaust emissions. . In Kenya, Jatropha requires as much as 20,000 litres of water to make a litre of biofuel, while Croton trees grow wild and yield about .35 litres of oil per kilo of nuts. A mature tree gives 25-35 kg. seed . Each year, researchers estimate, 25,000 tons of croton nuts drop like acorns to the ground in Kenya, unused because they have no nutritional value for humans.

Biofuel created from the Croton seed, or as we call it Croton Nut Oil (CNO), can replace diesel fuel in slow-spinning engines without any processing or chemical additives. Due to its natural properties CNO burns cleaner than traditional diesel fuel, self-lubricates engines, and contains 0% sulfuric content. Sufficient customer testing in central Kenya and laboratory studies show that CNO is ideal for use in diesel engines that spin at 1400rpm or less such as stationary diesel generators (i.e. gensets), water pumps and tractors without any chemical modification or additional processing.

Croton Seed Use:

a. **Croton Seed oil /Biofuel**

   Oil pressed from the nut can power the diesel engines, including irrigation systems and generators are used to provide electricity and refrigeration for rural villages.

b. **Poultry feed**

   After oil is removed from the nut, the seed cake is used by subsistence farmers as a high-protein

poultry feed.

c. **Croton Shell**

Briquettes - The shell is made into briquettes that can replace wood for cooking fires and industrial furnaces, thus decreasing deforestation.

d. **Fertilizer**

The shell is also made into organic fertilizer that can help restore the severely depleted soil.

Gas chromatography has been carried out on the croton oil. The fatty acid compositions of the raw croton oil are presented in table 1. The CMO mainly contains unsaturated fatty acids, including oleic, linoleic and linolenic acids, which all together account for 87 wt.% (see electronic supplementary material, FAME). The other major saturated fatty acids that are common in plant oils are palmitic and stearic acids. It has been observed that CMO contains the highest linoleic acid (C18-2) weight percentage of 74.31 per cent among various raw plant oils. This might be the reason for its relatively low viscosity compared with other pure plant oils at the same temperature.

Table 1.

Comparison of the fatty acid compositions of the plant oils (wt%).

fatty acids	Croton	sunflower	rapeseed	Jatropha
lauric acid (C12:0)	0.11	0.11	0.04	0.14
myristic acid (C14:0)	0.04	0.16	0.04	0.11
Palmitic acid (C16:0)	6.23	6.47	4.96	16.64
Palmitoleic acid (C16:1)	0.11	0.10	0.32	1.18
Stearic acid (C18:0)	4.37	4.34	1.73	5.94
Oleic acid (C18:1)	9.95	24.59	62.07	37.25
linoleic acid (C18:2)	74.31	62.68	19.16	38.03
linolenic acid (C18:3)	3.62	0.44	9.63	0.25
Arachidic acid (C20:0)	0.92	0.40	1.49	0.46
Erucic acid (C22:1)	0.33	0.71	0.53	0

The potential of croton seed oil as direct use to replace conventional diesel is immense. Further research will be required to establish its potential.

Laugh Out Loud

● The following is a true story about an anatomist.

One day after sleeping badly, an anatomist went to his frog laboratory and removed from a cage one frog with white spots on its back. He placed it on a table and drew a line just in front of the frog. "Jump frog, jump!" he shouted. The little critter jumped two feet forward. In his lab book, the anatomist scribbled, "Frog with four legs jumps two feet."

Then, he surgically removed one leg of the frog and repeated the experiment. "Jump, jump!" To which, the frog leaped forward 1.5 feet. He wrote down, "Frog with three legs jumps 1.5 feet."

Next, he removed a second leg. "Jump frog, jump!" The frog managed to jump a foot. He scribbled in his lab book, "Frog with two legs jumps one foot."

Not stopping there, the anatomist removed yet another leg. "Jump, jump!" The poor frog somehow managed to move 0.5 feet forward. The scientist wrote, "Frog with one leg jumps 0.5 feet."

Finally, he eliminated the last leg. "Jump, jump!" he shouted, encouraging forward progress for the frog. But despite all its efforts, the frog could not budge. "Jump frog, jump!" he cried again. It was no use; the frog would not response. The anatomist thought for a while and then wrote in his lab book, "Frog with no legs goes deaf."

● When Jay Leno went J-walking and asked pedestrians biology questions, he discovered some amazing new facts about life:

Jay Leno: "How does blood circulate in the human body?"

A high school cheerleader: "I not exactly sure. Does it go down the right leg and up the left?"

Jay Leno: "Can you name the three kinds of blood vessels?"

A freshman at UCLA: "Yes. Arteries, veins and caterpillars."

Jay Leno: Where is the alimentary canal located?"

A high school dropout: "Is it at the border of New York State a Canada

● An interesting paradox: Noses run but feet smell.

● Q. What do you do with a sick chemist?

A. First you try to helium, then you try to curium, but if this fails then you have to barium.

● Sherlock Holmes and Doctor Watson were sleeping out in the wild. At 2:00 am in the morning, Holmes woke up Watson and he asked, "Watson, look up and pray tell me what you presume."

Watson replied, "I see a vast Universe, full of stars and wonder. There is Venus over there. And the Moon is half lit. I know that lurking at the center of our galaxy is a black hole, and that gamma ray bursts occasionally blast at us, that there are billions and billions of planets out there, some of which must harbor life. We are not alone."

Watson would have continued but Holmes abruptly cut him off, "No, Watson, you idiot! Somebody stole our tent!"

● What do you Call an Educated Tube ?

A Graduated Cylinder

● My friend, Power has been super stressed all week. His boss keeps making him work over time. (P=W/t).

Member's PAGE

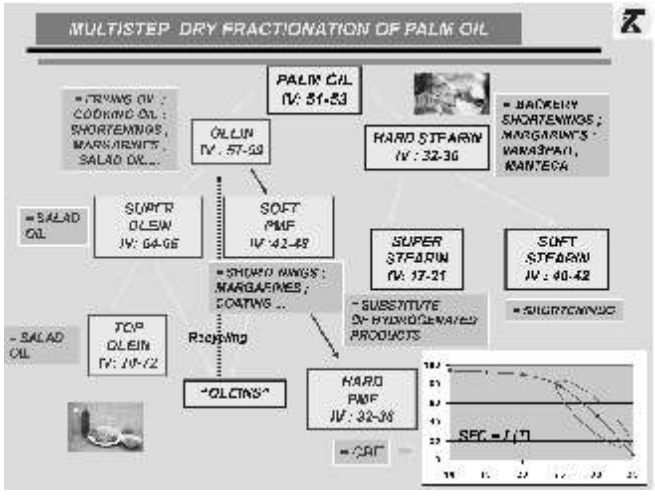
Palm oil & Palm oil Derivatives

Since Palm oil is cheapest oil and efficient source of Vegetable oil with Various Uses. Hence global consumption of Palm oil is rising day by day. The palm tree is the most efficient producer of oil per hectare of cultivated land compared to other vegetable oil sources such as soybean, rapeseed, & ground nut etc.

Palm oil and Its Derivatives are typically found in foods, body products, cosmetics, and cleaning agents, production of renewable fuels in the transport, power and heating and cooling sectors.

Based on type, the market has been segmented as follows:

- Palm Oil
- Palm Kernel Oil
- Palm Kernel Cake
- Oleochemicals
- Others (Olein, Palmolein, & Palm stearin)



Based on application, the market has been segmented as follows

- Food
- Cosmetics
- Biodiesel
- Others (Agrochemical, Personal care, and surfactants)

Product Specifications

PORAM (Palm Oil Refiners Association of Malaysia)

Product		Item	Quality Guideline
RBD Palm Olein	RBD PL	FFA (as palmitic) M&I Iodine Value (Wijs) M.Pt (AOCS Cc 3-25) Colour (5.25" Lovibond cell)	0.10% max 0.10% max 56 min 24 Deg C Max 3 Red max.
RBD Palm Oil	RBD PO	FFA (as palmitic) M&I Iodine Value (Wijs) M.Pt (AOCS Cc 3-25) Colour (5.25" Lovibond cell)	0.10% max 0.10% max 50 - 55 33 - 39 Deg C 3 Red max.
RBD Palm Stearin	RBD PS	FFA (as palmitic) M&I Iodine Value (Wijs) M.Pt (AOCS Cc 3-25) Colour (5.25" Lovibond cell)	0.20% max 0.15% max 48 max 44 Deg C Max 3 Red max.
Palm Fatty Acid Distillate	PFAD	Saponifiable Fatty Matter M & I FFA (as palmitic)	95% min (basis 97%) 1.00% max. 70% min.
Palm Acid Oil	PAO	Total Fatty Matter M & I FFA (as palmitic)	95% min. 3% max. 50% min.
Crude Palm Olein	CPL	FFA (as palmitic) M & I Iodine Value (Wijs) M.Pt (AOCS Cc 3-25)	5.00% max. 0.25% max. 56 min. 24 Deg C Max
Crude Palm Stearin	CPS	FFA (as palmitic) M & I Iodine Value (Wijs) M.Pt (AOCS Cc 3-25)	5.00% max. 0.25% max. 48 max. 44 Deg C min.

Based on region, the market has been segmented as follows:

- North America
- Europe
- Asia-Pacific
- Latin America
- Middle East and Africa

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