

INSIGHTEX

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GLOBAL MARKETS OF WHEAT



CONFERENCES

INNOVATION
Innovations in Beverages

LEGENDS OF BUSINESS
Kentucky Derby

YOUT TESTS
What are your test in 2018?

DEEP
processing of
CEREALS



ГЛИБОКА
переробка
ЗЕРНОВИХ

15 МАРТА 2018

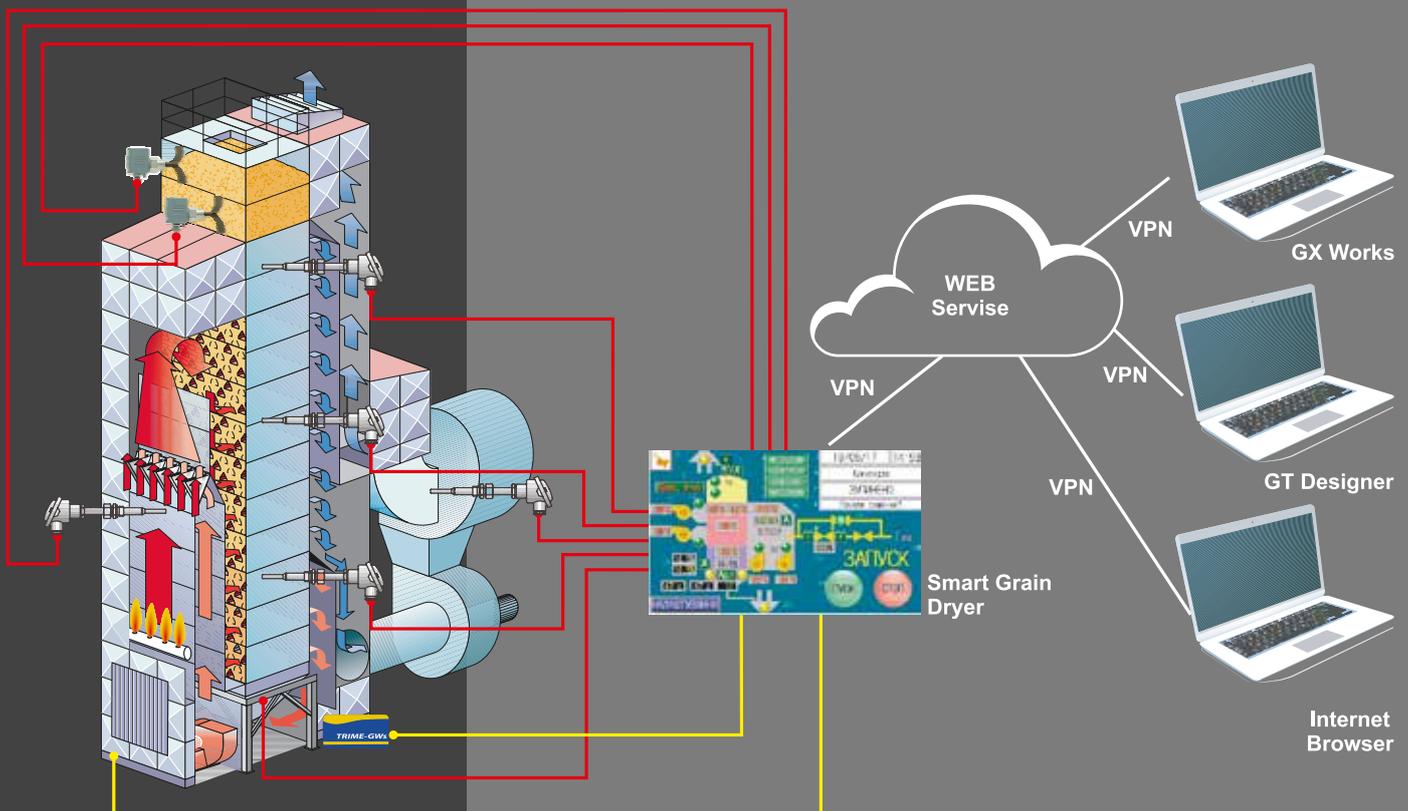
SMART GRAIN DRYER

MULTIPURPOSE SOLUTION TO DIFFERENT PROBLEMS

Smart Grain Dryer is multipurpose software and hardware that allows for the grain dryer automation level increase without a significant waste of time and resources. This is a ready-made solution that contains the necessary amount of I/Os for complete automation and pre-developed software.

Smart Grain Dryer provides with:

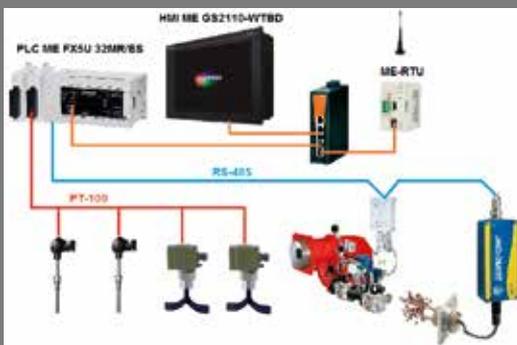
- Multipurpose hardware solution that allows for integration into any dryer control system without additional costs
- Multipurpose software solution that allows for control of most of the known grain dryers without additional programming
- Advanced algorithms for technological process control
- Ability to integrate into existing dispatching control systems of elevators
- Hardware and configuration remote control through iCloud



Smart Grain Dryer control board hardware

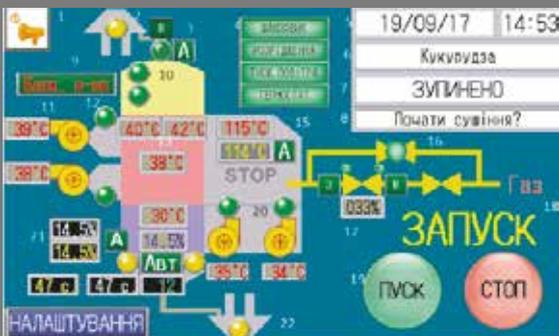
Smart Grain Dryer is a microprocessor control system based on Mitsubishi Electric FX5U PLC

- Up to 16 inputs for resistance thermometers Pt100
- 24..220 V DC/AC
- Outputs galvanic and relay insulation
- RS-485 interface
- Modbus, CC-Link communication
- ImpBus communication, up to 4 sensors
- Possibility to control gas burners of many known manufacturers
- Remote access through GSM connection
- Constituent parts from leading European manufacturers: Mitsubishi Electric, Weidmuller, Eaton



Advanced software solutions

- I/O configuration without software correction
- Software contains a full range of process controllers for different types of grain dryers
- Unified machine states diagram for different types of dryers
- Setup table for 10 types of cereals
- Equipment operating hours and failure statistics account
- Process logging
- User-friendly display and intuitive interface
- Remote monitoring and configuration through GSM connection
- Agent temperature and grain unloading control



- According to the results of Smart Grain Dryer operation on site, it was possible to achieve the accuracy of keeping the output grain moisture at a level of $\pm 0,5\%$
- Keeping the temperature of the drying agent within $\pm 1\text{ }^{\circ}\text{C}$

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Global Markets
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Innovation
 Review of International shows 1H 2018



Your Tests
 Try on ... Your Test for the Summer

The deep grain processing consists isolation and use of the grain components, and is large world industry for a long time. The USA' wet milling industry uses of 145 mio. metric tons of corn per year or 36% of the full harvest. However in Ukraine, it is rather a new direction which is capable to quick progress. At present, the several projects for the Construction of deep grain processing in Ukraine are at a different stages of realization.

The development of deep grain processing industry in Ukraine will allow to make hi-tech products which find a ready market as far as demand grows in the Global markets every year. Accordingly in the near future, formation of wet corn milling industry can be both the tool of attraction of foreign investments and a source of incomes. The further depending of processing towards manufacture of biotechnological products with the added cost allows to expand commodity markets.

The history knows examples of planned and operated expansion of the agricultural markets. The grain markets in the USA and Europe periodically feel crises by reason of overproduction. The stagnation of the market which has occurred 30÷40 years ago has been eliminated by development of deep grain processing with manufacture of feed and syrups. Since then, 40 % of demand for sugar is covered by glucose-fructose syrups in these countries. The grain market crisis which came about 10÷15 years ago in these countries was overcame by starting of the programs to produce biofuel from corn, wheat and rape. It has allowed to create markets of biofuel for the effective decision of problems in agricultural industry.

The transparent internal demand for the grain supported by major plants on its processing will lower instability of prices and will give assurance in the future for agricultural producers. These plants will found well-paid workplaces and tax base, and will become the centers of newest technologies and innovations for the local territories, and will give the possibilities to develop biotechnological companies.

GLOBAL MARKETS

ZAHA HADID



Opera house, 70,000 m². Guangzhou, China, 2003+2010.

In the heart of Guangzhou is a cultural landmark and a modern Millennium monument overlooking Pearl River.

Its profile shape, unique double design and promenade enhance the city function, open access to the coastal strip and residential areas creating a new dialogue with the growing city.



GLOBAL MARKETS

GLOBAL MARKET OF WHEAT

TERMS & DEFINITIONS

Concept of Wheat

Wheat (*lat.* triticum, *fr.* blé, *rus.* пшеница) is an annual plant of the cereals family [*lat.* Poaceae] and a leading grain in many countries.

Species of wheat

Any cereals hasn't so much species and grades as wheat. In additional to the global species and grades each country has the local species and grades. The agricultural classification isn't always similar with the categorization accepted by botanists. The different wheat grade are defined by form of the vegetative bodies, a stalk and an ear, and appearance of kernel, and their chemical composition.

In accordance to the basic classification the wheat divide on two [2] groups – **hard wheat** and **soft wheat**. Hard wheat give the elastic and flexible straw which in not broken at the threshing, and the ear sits strong on the straw, and the kernels are bare and separate easily from the tight-fitting flower films. The soft wheat [emmer wheat] is characterized by opposite signs – the straw is very long and breakable, and breaks easily at the threshing; the ear loses touch easily from straw, and the kernels are shaped strong by films and separated very difficult. According to the classification on the global markets the hard wheat ranks as English wheat [*Triticum turgidum*] and the soft wheat ranks as Polish wheat [*Triticum polonicum*].

How to make out wheat? The soft wheat has the wider and shorter ear. The external films of the hard wheat envelop tightly the cones, therefore the grain is not fallen off on a root, but it is more difficult to pick out at the threshing. The soft wheat by ear long is similar to the reed as their films rather very long. The big ear of hard wheat is densely set by cones and unclenched little at width. The soft wheat has a little of awns or hasn't the awns at all, or they are not very long and doesn't exceed the long of an ear. The awns of the hard wheat are more developed and can be in 2÷3 times more long than an ear.

The kernel of the hard wheat differs both the form and a chemical composition. The kernel of the soft wheat is shorter and with the round-bellied center where the kernel of the hard wheat is longer and ridge. The kernels of the soft wheat are easily flattened at pressing and uncover the white mealy interior whereas the kernels of the hard wheat break up to wrong pieces, and the interior is opaque and with the yellow shade.

The wheat can be **winter wheat** and **spring wheat**. The spring wheat can be hard wheat only whereas the winter wheat can be both and hard and soft.

International classification of wheat

Hard Red Winter	Твёрдая красная озимая
Hard Red Spring	Твердая красная яровая
Soft Red Winter	Мягкая красная яровая
White	Белая
Durum	Дурам

Durum [*lat.* *Triticum durum*] is the sort of the hard wheat which has been grown in droughty regions. The Durum milling leads to a flour used to the pasta production.

Marketing year

Marketing year is 12-month's period from the beginning of wheat harvesting. The marketing year for the key exporters is:

- April/March – India
- July/June – China, EU, Ukraine, Kazakhstan
- October/September – Australia
- December/November - Argentina

Indicators of wheat market

- **Areas under wheat.** Area planted and area harvested under wheat are measured in acres and hectares: 1 HA = 2.471 acres.
- **Crop yield.** Quantity of the wheat kernel received from 1 HA or 1 acre of the area harvested. It is measured in metric tons per hectare or Bushel per acre: 1 Bu of wheat per acre = 0.0627672 MT/HA.
- **Croppage.** Croppage of wheat is measured in metric tons or bushels: 1 Bu of wheat = 27.216 kg.
- **Trade statistic for wheat.** Trade statistic for wheat includes the wheat kernels, and wheat flour and some grade of pasta on the grain equal basis.

Area of wheat cultivation



MARKET PERFORMANCE

Production. According to FAO the global wheat planted areas occupy 215.5 mio.Ha, and it is greatest among all agricultural crops [II – corn, 177.4 mio.Ha, III – rice, 163.2 mio.Ha]. The global wheat production in 2017/18 MY is estimated in 758.8 MMT. Leaders of wheat cultivation are the EU, China, India, ruSSia and USA with share 2/3 of the world production. The wheat yield in the EU countries – 5.50 MT/HA, the average global productivity – 2.25 MT/HA, the maximum reached productivity – 9.80 MT/HA, the wheat yield in Ukraine – 4.015 MT/HA [2017].

Consumption. The world consumption of wheat for 2017/18 MY is predicated in 742.5 MMT.

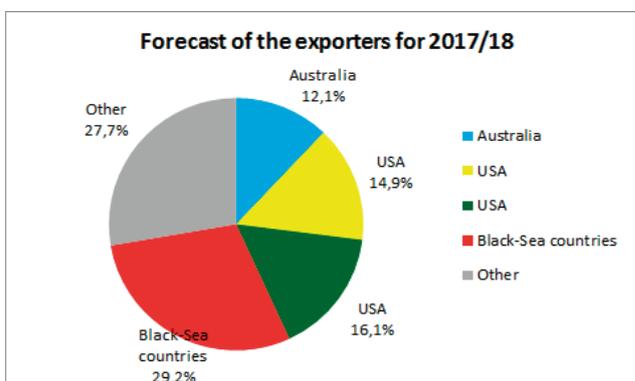
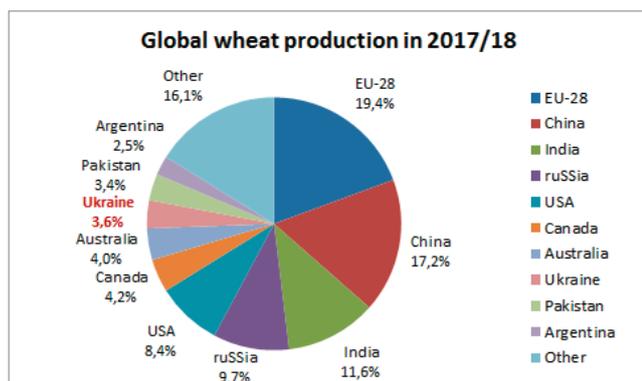
Trade. The expected wheat export for 2017/18 is 184.4 MMT, 24.3% of the full production. In accordance with the FAO data in 2017 it is registered 180 countries-importers of wheat from which four [4] countries with import more than 7 MMT – Egypt [12.0 MMT], Indonesia [12.5 MMT], Algeria [7.7 MMT] and Brazil [7.8 MMT].

Stocks. The predicted ending stocks of wheat in 2017/18 in comparison with 2016/17 will grow on 6.4%, from 252.6 to 268.9 MMT.

MARKET SHARES OF EXPORTERS

The traditional major wheat exporters are Australia, Canada, EU, and USA, but in recent years the Black Sea region – Kazakhstan, Russia, and Ukraine – has emerged as a strong player in the global wheat market. Wheat from Australia, EU, and USA is marketed on its high quality, while the Black Sea has been successful at competing on lower price and location. This dynamic has increased competition rapidly and has affected all major suppliers in the global market. Russia and Ukraine, combined, currently hold around 82% of the Egyptian market, while USA carries a 1% market share only, down from 8% 5 years ago. Nigeria purchased 80% of wheat from USA and only 1% from Russia, but in 2016/17, those shares were radically different at 33% and 26%.

Australia primarily supplies Asia for wheat. Over the last 5 years, however Ukraine has gained market share in the Indonesian market, which is Australia the second-largest wheat importer. In 2012/13, Ukraine supplied just 1% of the Indonesian wheat imports; today its market share has reached 16%. Despite Indonesian preference for Australian wheat for its milling quality, the competitive price for Black Sea wheat has prompted increased purchases.



Global wheat production (MMT)

#	Country	2015/16 ^R	2016/17 ^E	2017/18 ^F
1	EU-28	160.480	145.248	151.600
2	China	130.190	128.845	129.770
3	India	86.530	87.000	98.510
4	ruSSia	61.044	72.529	84.992
5	USA	56.117	62.833	47.371
6	Canada	27.594	31.729	30.000
7	Australia	22.275	30.363	21.500
8	Ukraine	27.274	26.800	26.981
9	Pakistan	25.100	25.600	26.500
10	Argentina	11.300	18.400	18.000
	Other	127.301	121.159	123.565
	Total	735.205	750.506	758.789

Global wheat export (MMT)

#	Country	2015/16 ^R	2016/17 ^E	2017/18 ^F
1	ruSSia	25.543	27.809	37.500
2	EU-28	34.686	27.319	25.000
3	USA	21.811	29.488	24.500
4	Canada	22.118	20.235	22.500
5	Australia	15.780	22.061	17.500
6	Ukraine	17.431	18.107	17.200
7	Argentina	8.750	12.275	14.000
8	Kazakhstan	7.600	7.250	7.500
9	Turkey	5.605	6.177	6.500
10	Mexico	1.568	1.119	1.200
	Other	11.114	10.402	11.009
	Total	172.006	182.242	184.409

MARKETING OF THE GLOBAL GRAIN

The global grain market include three positions: Wheat, Coarse grain and Rice.

Wheat

For 2017/18, global production is raised to a new record [758.8 MMT] based on a larger crop for Russia, Argentina, Ukraine and Moldova.

Indonesia is forecast to be the largest wheat importer for 2017/18 at 12.5 MMT, passing Egypt, which has traditionally been the top wheat importer. Indonesia wheat imports have been growing based on food and feed demand. Population and incomes are rising and diets are moving towards Western trends of pastries, instant noodles, and poultry. Even though there are feed wheat import restrictions, lower-priced milling wheat is still an affordable ingredient to process into feed rations. Traditionally, Indonesia’s top four wheat suppliers have been – ranked from highest to lowest – Australia, Canada, Ukraine, and the United States. However, competitively priced black Sea wheat continues to put pressure on high-quality suppliers by offering wheat at a much lower price. So far in 2017/18, those top suppliers have changed to Ukraine, Australia, Russia, and Canada.

World grain balance (mio. MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Production	2468.584	2601.381	2567.013
– wheat	735.205	750.506	758.789
– coarse grain	1260.436	1364.722	1321.962
– rice	472.943	486.153	486.262
Consumption	2434.813	2573.880	2583.311
– wheat	711.609	739.391	742.503
– coarse grain	1255.090	1352.906	1360.323
– rice	468.114	481.583	480.485
Export	397.063	411.580	421.493
– wheat	172.006	182.242	184.409
– coarse grain	184.852	181.589	189.225
– rice	40.205	47.749	47.859
Ending Stocks	626.765	654.266	637.968
– wheat	241.489	252.604	268.890
– coarse grain	252.561	264.377	226.016
– rice	132.715	137.285	143.062
Export / Production	16.1%	15.8%	16.4%
– wheat	23.4%	24.3%	24.3%
– coarse grain	14.7%	13.3%	14.3%
– rice	8.5%	9.8%	9.8%

Turkey and Kazakhstan is Top Global Wheat Flour Exporters. Most of the world’s wheat trade is in the form of grain due to the greater perishability of flour as well as the desire to mill in-country and capture value-added benefits domestically. Some countries even have disproportionately higher tariffs on wheat flour to encourage wheat grain imports. Still, there are a few countries that import large volumes of wheat flour, often due to limited domestic milling capacity. Kazakhstan was the largest flour exporter for several years following the removal of EU wheat flour export subsidies. Kazakhstan’s largest markets are mainly in Central Asia. Turkey exports to a wider variety of markets, surpassed Kazakhstan in 2012/13 and has been the world leader ever since.

Coarse grain

Coarse grain includes corn, barley, sorghum, oats, and rye. Corn with share of 88% is major coarse grain.

Global coarse grain trade [189.2 MMT] is driven by import to the EU [16.9; 8.9%], China [17.1; 9.0%], Japan [16.7; 8.8%], Mexico [16.9; 8.9%], Saudi Arabia [12.5; 6.6%], Iran [11.1; 5.9%], Egypt [10.1; 5.3%] and South Korea [9.8; 5.2%] = 101.3 MMT; 53.5%. The major coarse grain traders are the USA [62.5; 33.0%], Brazil [31.0; 16.4%], Argentina [27.7; 14.6%] and Ukraine [25.1; 13.3%] = 136.3 MMT; 72.0%.

Global corn prices have continued their strong upward. In March to January 2018, Argentine bids soared 19 to 186 \$/MT amid continued weather concerns in Argentina. Brazil bids are seasonally unavailable. Black Sea bids were up 18 to 193 \$/MT on strong overseas demand. U.S. quotes also rose 18 to 183 \$/MT mainly due to Mississippi waterway disruptions along with robust foreign demand.

Rice

Global rice production is at a record this year, primarily due to higher production in China [146.0 MMT, 30.1%] and India [107.5 MMT; 22.2%].

Trade, too, is now at a record [47.36 MMT], with major export from India [12.5; 26.4%], Thailand [10.2; 21.5%], Vietnam [6.7; 14.1%] = 29.4; 62.1%, and major import for China [5.5; 11.6%], Nigeria [2.6; 5.5%] and the EU [1.9; 4.0%] = 10.0 MMT; 21.1%. India’s exports are raised to record levels.

The global stocks are 140.8 MMT, the majority of which are held by China [94.0; 66.8%].

U.S. quotes rose to 590 \$/MT, reflecting tightening supplies. Quotes from Thailand, India, and Vietnam are currently trading within a range of 410÷420 \$/MT. South American quotes dropped as new crop begins to be harvested in some regions with Uruguay now nearly \$70/ton less than the United States. Pakistan rice is currently the lowest quote at 385 \$/MT.

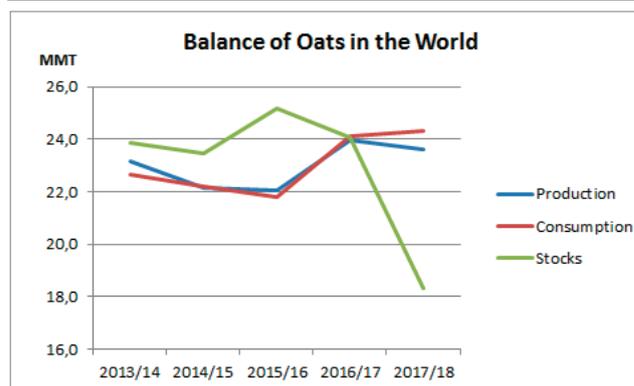
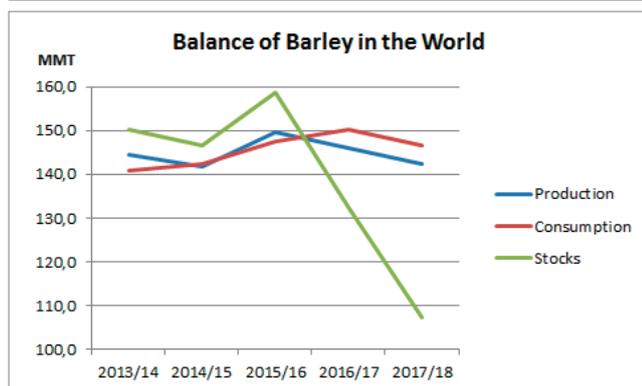
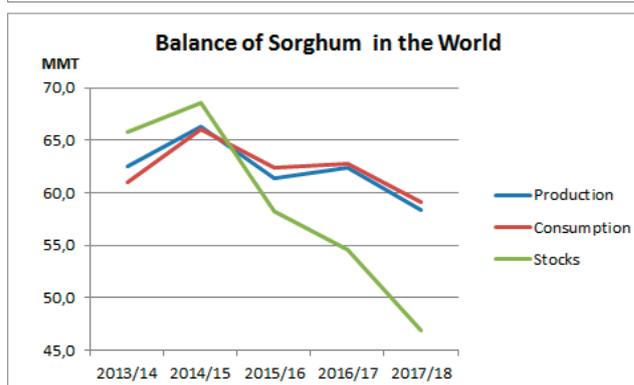
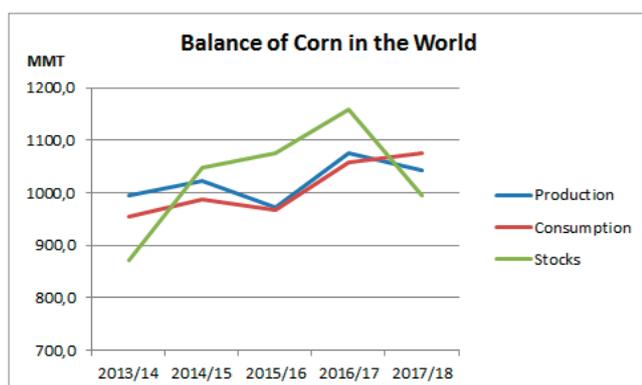
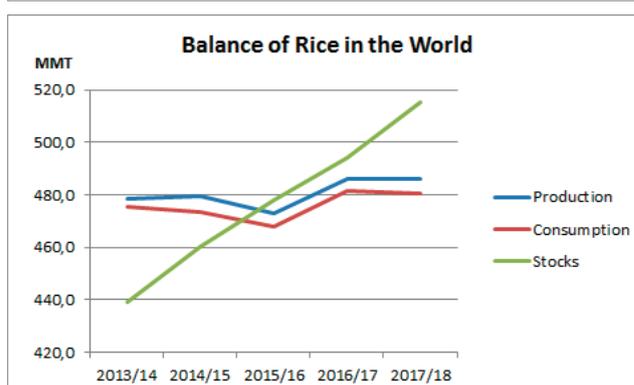
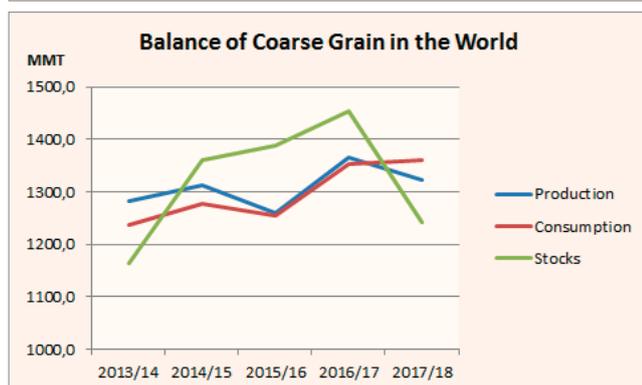
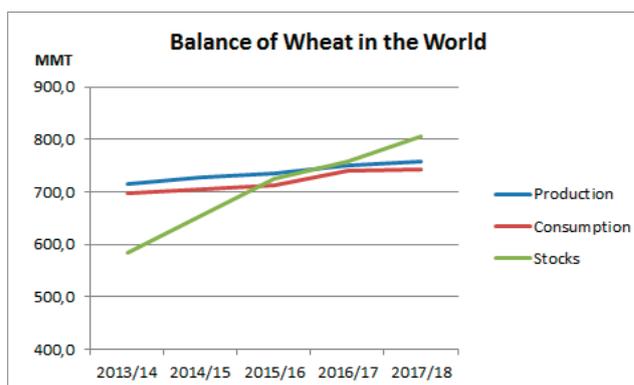
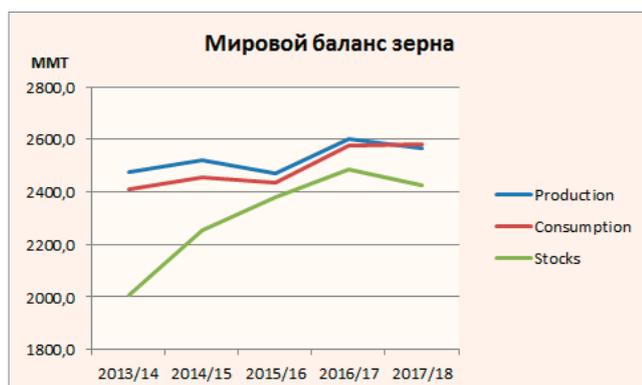
Planning for crops in 2018

The shown below diagrams are intended to help of the grain producers to choice the kind of the grain under cultivation in 2018 on the conditions of the market positions [certainly it is necessary to take into account other factors as crop rotation, soil conditions, etc. for a definitive choice]. The great demand will be on the grain when the consumption surpasses production and stocks is low, namely – corn, barley, sorghum, oats and rye.

The curve of stocks on the diagrams doesn't tie with axis Y, and it shows the trend only. To estimate the relation of stock/production it is necessary to apply the table below [less than 8% - critical stocks, more that 20% – extreme stocks]. The extreme stocks of wheat and rice can be directed to feeds.

Stocks/Production Ratio in 2017/18

wheat	rice	coarse	corn	sorgho	barley	oats	ray
35.4%	29.1%	17.7%	19.8%	7.6%	12.7%	10.6%	9.2%



EU-28

EU confirms the status of wheat-exporter.

Production. The wheat production in 2017/18 will reach up to 151.7 MMT that is below record of 160.48 MMT in 2015/16. Nevertheless it is third crop by volume. The lowering is based on the lower areas and reduction of harvesting in France. Despite a good rain in May-June the light shortage and low temperature in the blowing period have led to weaker crops. The ears of wheat which should contain of 20÷30 kernels were filled in 5÷10 kernels only. The low price of wheat assists the reduction of area harvesting in favor of more profitable rape. The improved genetics from France and Germany was support for wheat. The quality of wheat is good.

Consumption. The EU-28 wheat consumption in 2016/17 marketing year has fallen nearly of 2 MMT. It is expected that the consumption of wheat will add of 1 MMT in 2017/18 at the expense of the UK bioethanol plants resumption of work. The wheat consumption in the feed sector has shorten of 2 MMT mainly by reason of more difficult deliveries from France; this position was replaced with deliveries of qualitative barley from Spain.

Trade. Despite the lower production EU-28 has confirmed the status of wheat-exporter. The good start has been given export in the summer although the temp were slowed down on the eve of winter. The major consignee of the European wheat were Algeria, Saud Arabia, Morocco and Egypt. The high quality of the European wheat is an appeal primary factor. The European Union is competing heavily to regain its share of the Middle Eastern and African markets, after last year's poor wheat crop. Wheat is imported to EU generally for bioethanol production, and only 0.5 MMT imported wheat uses as feed. The main appeal of import deliveries is price.

Wheat balance in EU-28 (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	26.777	27.092	26.300
Yield, MT/HA			
Beginning Stocks	12.697	15.557	10.772
Production	160.480	145.248	151.600
MY Import	6.916	5.286	6.000
Total Supply	180.093	166.091	168.372
Consumption	129.850	128.000	128.750
– Feed and Residual	59.000	57.300	57.000
– FSI consumption	70.850	70.700	71.750
MY Export	34.686	27.319	27.000
Ending Stocks	15.557	10.772	12.622

RUSSIA

Record production, low profitability.

Production. USDA's estimate for wheat harvesting is 85.0 MMT. According to the Ministry of Agriculture Russian wheat production from acreage of 27.2 MHA was 85.8 MMT in bunker weight [+ 14.8% to 2016]. Average wheat yields are high in all regions making an average 3.12 MT/HA (2.68 MT/HA in 2016). There is no comprehensive data on the quality of the wheat crop, but industry analysts claim that wheat do not indicate quality concerns. Moreover, protein content and test weight of wheat are higher than last year and total volume of food quality wheat is bigger than in 2016/2017. This may bolster Russian exporters. The higher production follows from good harvesting conditions and significantly higher yields.

Consumption. The domestic prices in Ural, Siberia and Volga region were low on the score of high old stocks and pressure of a new crop. Profitability of wheat was not attractive to producers and we can see reduction of area harvesting under wheat in 2018.

Trade. USDA's estimate of total Russian wheat export is 36.0 MMT. The exporters assumed higher different between the domestic and export prices, however impossibility to ship at the expected prices have led to growth of stocks. Industry analysts estimate the total capacity of Russia's grain export infrastructure to be from 48 to 55 MMT. However Russian grain exports are limited by such factors as ice conditions on the Azov Sea, loading restrictions at Black Sea terminals and trade obstacles at the biggest destination countries. Also, diversification of grain shipments into various types of grains and quality grades. Russian grain traders shipped wheat to 119 countries (110 in 2016). The largest buyers of Russian wheat in 2016/2017 were Egypt (6.8 MMT), Turkey (3.3 MMT) and Bangladesh (2.0 MMT).

Wheat balance in Russia (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	25.577	27.004	27.200
Yield, MT/HA	2.387	2.686	3.125
Beginning Stocks	6.287	5.607	10.830
Production	61.044	72.529	85.000
MY Import	819	503	500
Total Supply	68.150	78.639	96.330
Consumption	37.000	40.000	45.000
– Feed and Residual	14.000	17.000	21.500
– FSI consumption	23.000	23.000	23.500
MY Export	25.543	27.809	36.000
Ending Stocks	5.607	10.830	15.330

USA

Consecutive reduction of the area harvesting under the wheat but import is increased.

Production. The US wheat production in 2017/18 reduces to 47.4 MMT [-32.6%]. Besides the projected beginning stocks were increased because of lower use of wheat by seeds as the areas was withdrawn in favor of canola. The area harvesting under wheat from 2014 to 2017 were reduced on 25.8%, and apparently the trend will remain in 2018.

Consumption. In the United State the wheat is used as seeds [5.6%], food [85.4%] and feed [9.0%]. According to the initial plan the feed consumption was reduced from 156 in 2016/17 to 120 mio. Bu in 2017/18; however the lowering has widen from 120 to 100 mio. Bu in January 2018, and 20 MMT was added to the ending stocks.

Trade. The structure of wheat export has the changes: 10 mio. Bu [270 thous. MT] of hard wheat will be replaced by the soft spring wheat; the import of the hard wheat from Canada will be increased of 5 mio. Bu [135 thous. MT] thus that the production and average prices don't change. The wheat import to USA has grow on 37.2% for last 3 years.

US wheat production and export by class in 2017/18

Hard Red Winter	Hard Red Spring	Soft Red Winter	White	Durum	Total, mio. Bu
Production					
750	385	292	258	55	1741
43.1%	22.1%	16.8%	14.8%	3.2%	100%
Export (the total export rate from production is 56.0%)					
405	245	90	215	20	975
41.5%	25.1%	9.2%	22.1%	2.1%	100%

Wheat balance in USA (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	19.142	17.762	15.211
Yield, MT/HA	2.932	3.538	3.114
Beginning Stocks	20.477	26.522	32.131
Production	56.117	62.833	47.371
MY Import	3.064	3.217	4.205
Total Supply	79.658	92.602	83.707
Consumption	31.942	31.753	30.264
– Feed and Residual	4.070	4.260	2.720
– FSI consumption	27.872	27.493	27.544
MY Export	21.164	28.718	26.522
Ending Stocks	26.522	32.131	26.921

Canada

The improved genetics are a primary factor of the stable crop at the drought in prairies.

Production. Average wheat yields in 2017/18 are expected to be in line with five-year average despite the drought conditions this year. More than half of the major wheat-producing areas of Saskatchewan (leading wheat-producing province) received 40÷60% of average precipitation in April-July 2017. However high precipitation levels in the 2016/17 winter led to a soggy spring, resulting in a surface layer (<5cm) with better-than-average moisture reserves at the start of April in the majority of the crop growing areas. In addition, new wheat varieties exhibited improved drought tolerance and improved water-use efficiency. Dry weather conditions and low disease pressure in much of the Prairies resulted in good crop quality: the harvested samples indicated that 88% of Red Spring and 77% of Amber Durum wheat would be grade one. Contrariwise the canola on the higher return basis takes away the area harvesting from wheat. In 2017 the canola crops for the first time in history have exceeded area harvesting of wheat.

Consumption. In 2016/17 the wheat consumption increased for feed purposes [+94%, up to 5.3 MMT] as the quality of wheat was weak; however the use for milling remains equal. The wheat for ethanol production has decreased by 12.5% to 0.125 MMT, and this figure remains in 2017. In 2017/18 the wheat consumption will decrease by 18.6% to 8.7 MMT for account of the feed shorten as deliveries is difficult. The qualitative wheat will be redirected for export.

Trade. The expected export of the Canadian wheat in 2017/18 is 22.0 MMT. It is +8.6% to 2016/17 as higher US demand for the spring wheat and higher shipments of winter wheat to Algeria. The ending stocks are in the power of the export deliveries.

Wheat balance in Canada (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	9.577	8.878	8.944
Yield, MT/HA	2.881	3.574	3.019
Beginning Stocks	7.101	5.178	6.835
Production	27.594	31.729	30.000
MY Import	518	507	550
Total Supply	35.213	37.414	37.385
Consumption	7.924	10.323	8.700
– Feed and Residual	2.756	5.341	3.650
– FSI consumption	5.168	4.982	5.100
MY Export	22.111	20.256	22.000
Ending Stocks	5.178	6.835	6.635

CHINA

Growth of demand for fodder wheat from stocks is the result of removal of restriction on the foreign investment in animal industries development.

Production. The wheat harvested in the Summer 2017 was more expectations as the result of use of better seeds and favorable weather conditions. China has reduced the crop areas in 2016 by 30 mio. Ha including the shift of 10 mio. Ha to a soy been. The wheat crop areas in 2016 and 2017 was reduced by 3 mio. Ha for each year, and the tendency will continue predictable in 2018: 17 regions will move the grain crops to a silos, a lucerne, oats, sorghum and soy bean [China is 23 regions + 4 municipalities + 5 autonomous district + 2 special areas]. The GOC requirement consists in the minimal support of the wheat and rice prices. In September 2017, the State council of the China issued the prospectus which call to reform the grain industry, and to increase the efficiency and profitableness of agricultural. The prospectus sets a object to create the industrial grain system by 2020.

Consumption. The National Committee on Reform has removed the restrictions on the foreign investment into processing of oil-yielding crops, sugar, rice and wet corn processing, and it has stimulated the animal industries development in the areas of grain growing, and has raised demand for grain including wheat, and has allowed stimulus to consume the high grain stocks. The feed cost has weaken after strategic grain reform and subsidizing of silos in 60 RBM per MT.

Trade. The import of wheat to China has raised after the VAT was corrected and the Chinese Yuan was strengthened [in May 2017, Ministry of Finance changed the VAT for agricultural product including wheat from 13% to 11%].

Wheat balance in China (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	38.119	36.760	35.000
Yield, MT/HA	5.893	5.973	6.143
Beginning Stocks	100.472	119.774	101.278
Production	224.632	219.554	215.000
MY Import	3.174	3.000	3.000
Total Supply	328.278	333.328	319.278
Consumption	217.500	232.000	238.000
– Feed and Residual	153.500	162.000	166.000
– FSI consumption	64.000	70.000	72.000
MY Export	4	50	20
Ending Stocks	110.774	101.278	81.258

India

Record production controls the prices.

Production. The expected wheat production for 2017/18 is 98.4 mio.MT. The record production has weakened the wheat prices in the majority growing states. In spite of the end of season, the average spot wheat price in October 2017 was 15.670÷16.960 INR/MT [240÷260 \$/MT], and it was not far to the prices of the State purchases in 16.250 INR/MT [250 \$/MT]. The local farmers and traders consider the wheat quality in the end of the season more than normal. Leaning on the experience of last years, the wheat quality on the end of season wished always to be the best therefore the prices flashed to high levels. The current wheat quality says that the market prices for wheat will by stead in 2017/18.

Consumption. The State purchases of wheat is increased by 34% to 30.8 mio. MT as the harvest was record. It is second highest index after 37.9 mio. MT in 2012/13. The purchases in the majority of State have been finished in June-July proceeding from the estimated harvesting and expected market prices. Government wheat stocks are sufficient to meet the commitment for the National Food programs (27 MMT) and buffer stock (7.5 MMT) with a surplus of only 4 MMT for open market sales (OMS). OMS sale of wheat in last 5 years has ranged 4.2÷7.0 MMT.

Trade. All analytical agencies predict fall of import from 5.9 mio.MT in last season to 3.0÷3.5 mio.MT on the basis of sufficient internal deliveries. The wheat has imported mainly from Black Sea pool and has destined to millers in Southern India because this wheat has bought the cargo advantage as compared with the wheat which moves in the country. However the opportunity of import are mentioned by government offers to increase the import duty to restrain import of the cheap foreign wheat.

Wheat balance in India (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	31.470	30.220	30.600
Yield, MT/HA	2.750	2.879	3.215
Beginning Stocks	17.220	14.540	9.800
Production	86.530	87.000	98.380
MY Import	471	5.896	3.500
Total Supply	104.221	107.436	111.680
Consumption	88.551	97.120	100.000
– Feed and Residual	4.200	4.700	5.000
– FSI consumption	84.341	92.420	95.000
MY Export	1.130	516	500
Ending Stocks	14.540	9.800	11.180

AUSTRALIA

Decreasing of wheat harvest on 40% by reason of the unfavorable weather conditions.

Production. The Australian winter wheat crop will reduce considerably in 2017/ 2018 in comparison with 2016/17 by reason of the unfavorable weather conditions. The record low rainfall in June-July 2017 in majority of areas of growth affects unfavorable on the harvest. To December 2017, rainfall were average only, and the temperatures were high, and the warm air flows removed a moisture from the top soil layer. As a result it could not fill a moisture in soil. In additional the low global prices for wheat have encouraged a change of the wheat crops in favor of more expensive grain crops: –0.435 to 12.4 mio. HA. The harvest of wheat was 20 mio. MT or by 40% below of record 35 mio. MT in 2016/17.

Consumption. Growing demand for fodder wheat in Queensland and the New Southern Wales occurs by reason of reduced stocks and low perspectives for crops in 2017/18. Rise in prices for cereal crops was occurred already in the majority of areas of Australia owing to a low winter harvest. The rise in prices for wheat push on the prices for alternative forage crops such as barley, sorghum and rice. Increasing in the prices at grain is also by reason of increasing in the prices at water as the water stocks on dump is falling.

Trade. Dispute on the 40% falling of the wheat production [–15.0 MT], the export shipments will be reduced by 5 mio. MT only, from 23.0 mio. MT in 2016/17 to 18.0 mio. MT in 2017/18. Predictably, share of the export contracts will be served on account of stocks which will go down from 8.2 mio. MT to 3.4 mio. MT in the specified period. The worsening prospects for crops in northern and central New Southern Wales could limit exports because of strong domestic demand and high prices for grain.

Wheat balance in Australia (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	11.282	12.835	12.400
Yield, MT/HA	1.974	2.727	1.613
Beginning Stocks	4.670	3.850	8.231
Production	22.275	35.000	20.000
MY Import	154	154	150
Total Supply	27.099	38.981	28.381
Consumption	7.125	7.750	7.000
– Feed and Residual	3.700	4.300	3.500
– FSI consumption	3.425	3.450	3.500
MY Export	16.124	23.000	18.000
Ending Stocks	3.850	8.231	3.381

ARGENTINA

Restoration after flooding.

Production. The wheat area in Argentina in 2017/ 2018 is 5.6 mio. HA, the production is 17.5 mio. MT. 150÷200 thous. HA was lost owing of flooding. It is areas in NW of Buenos Aires, and to the South and to the East from Cordova, and on the South of Santa Fe. The areas in 5.2 mio. HA is highest with 2008/09 but it is still far from 7.1 mio. HA in 1996/97. The areas under wheat crops increase the second year successively as the result of a policy of President Makri who has eliminated the export taxes in 23% in December 2015. The wheat crop developed in very humid conditions. Sowing was began with the superfluous humidity of soil, and many sections turn out unacceptable for sowing because of wash away soils. Usually the winter is dry season but this winter was humid and the temperature was more warm. The conditions in the harvesting period was good though the wheat quality had the doubt. Quality depends on nutrient, and the rainfall could wash up a part of fertilizers. The prime cost of cultivation of wheat is ≈ 430 \$/HA without an overhead charges.

Consumption. The main direction of wheat consumption is the food purposes [Flour].

Trade. The question of the big export of wheat in 2016/17 in 13.0 mio. MT is still discussed. It is result of higher accessible volumes than it was supported earlier. Export for 2017/18 is designed in 11.5 mio. MT. One half of the export is shipped to South-East Asia and MENA, and other half is shipped to the countries of South America as Duty Free contracts in accordance with Mercosur agreement [Brazil – 5.0, Paraguay – 0.4, Bolivia – 0.3]. In 2017/18, Argentina will ship first 30 thous. MT to Mexico. Argentina ships of 9.5 mio. MT of wheat in July then export is slowed down.

Wheat balance in Argentina (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	3.945	5.560	5.600
Yield, MT/HA	2.864	3.309	3.125
Beginning Stocks	4.804	616	321
Production	11.300	18.400	17.500
MY Import	12	5	10
Total Supply	16.116	19.021	17.831
Consumption	5.900	5.700	5.900
– Feed and Residual	200	100	100
– FSI consumption	5.700	5.600	5.800
MY Export	9.600	13.000	11.500
Ending Stocks	616	321	431

UKRAINE

War has reduced demand for wheat.

Production. Ukraine is the eight producer of wheat in the World in 2016/17 with volume of 26.8 MMT. It is low more than 1.7% than in 2015/16. It is based on the area reduction as first the winter wheat which occupy more than 90% of all wheat crops in the country. The farmers did not active sowing in the autumn on the score of low humidity of soil as it could lead to high downfall of plants. The spring thawing of snow has led levels of the soil humidity to norms, and it allowed to increase the spring wheat sowing in spring 2017. The enterprises specified sufficient levels of agrochemicals and fertilizers but long time of deliveries caused alarm.

Consumption. The domestic consumption of wheat was for the food purposes [79.1%, mainly a milling to a flour]. The flour manufacture was considerable reduced in 2014/15 because the demand was declined in connection with fall of incomes of the people and loss of control over Crimea and Donbass. Flour begun to show growth signs in 2016/17, and this tendency has lasted in 2017/18. As expected, the consumption of wheat on a forage [15.5% of full harvest] will grow by 6.8% in 2017/18 for the account of reduction of corn on a forage. The industrial use of wheat is 5.4%.

Trade. Export of wheat in 2016/17 is estimated in 18.8 MMT [67.8% of full harvest]. However export of wheat will decline by 8.9% in 2017/18 by reason of more conservative forecasts for production. It was shipped of 2.93 MMT to India which become in the current marketing year as new buyer. Other destinations is Egypt [2.51 MMT], Bangladesh [1.72 MMT], Indonesia [1.61 MMT], Thailand [1.59 MMT], South Korea [1.06 MMT], Morocco [0.98 MMT], Philippines [0.69 MMT], Tunisia [0.65 MMT].

Wheat balance in Ukraine (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	7115	6450	6600
Yield, MT/HA	3.833	4.155	4.015
Beginning Stocks	5.678	3.348	1.782
Production	27.274	26.800	26.500
MY Import	27	41	25
Total Supply	32.979	30.189	28.307
Consumption	12.200	10.300	10.000
– Feed and Residual	5.100	3.600	3.500
– FSI consumption	7.100	6.700	6.500
MY Export	17.431	18.107	16.500
Ending Stocks	3.348	1.782	1.807

KAZAKHSTAN

Kazakhstan looks for a variety to wheat.

Production. The Ministry of Agricultural of Kazakhstan has informed that the Kazakh farmers have harvested 21.67 MMT of grain from area of 15.24 mio. Ha or 99.6% of full harvesting area with the average productivity of 1.42 MT/HA. The share of wheat in the Kazakhstan full grain is 64.3%. The wheat production in 2017 is lower by 10% than in 2016 by reason of more lower sowing areas and smaller productivity. The reasons of decrease of areas is (1) resumption of subsidies for the seeds of oil-bearing plants which have given strong stimulus to switch, and (2) the government politics in 2009÷2015 directed on a variety of the crops. As a result, the wheat areas were reduced from 14.7 mio. HA to 11.7 mio. HA but have jumped up to 12.4 mio. HA in 2016 as result of return of subsidies for the grain. The majority of the agricultural technics is become outdated and could not finish harvesting in time [65% of tractors and 46% of combines is oldest than 20 years]. Quality of the wheat [low wheat vital gluten] is a problem + the crop part in mentioned by a rust and septoria that has lowered productivity to 1.186 MT/HA vs. predicted 1.7÷2.0 MT/HA. The farmers who applied fertilizers and fungicides have received yield of 1.7÷1.8 MT per hectare.

Consumption. 2017/18: 4.6 MMT of food + 0.2 MMT of seeds + 2.1 MMT of feeds = 6.9 MMT. The consumption of flour grows with an increasing in population. Wheat is the most used forage but if the government strategy will be executed barley and grasses can become in place of it.

Trade. Uzbekistan is importer No.1 of the Kazakh wheat keeping near half of export. Uzbekistan [46.5%] + Tajikistan [27.8%] + Afghanistan [7.6%] + China [6.9%]= 88.8%

Wheat balance in Kazakhstan (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	11.571	12.373	11.800
Yield, MT/HA	1.188	1.211	1.186
Beginning Stocks	3.284	2.599	3.964
Production	13.748	14.985	14.000
MY Import	67	80	50
Total Supply	17.099	17.664	18.014
Consumption	6.900	6.900	6.900
– Feed and Residual	2.100	2.100	2.100
– FSI consumption	4.800	4.800	4.800
MY Export	7.600	6.800	7.500
Ending Stocks	2.599	3.964	3.614

TURKEY

New system of subsidizing.

Production. All wheat crops of 2017/18 from harvested area in 7.8 mio. HA are already collected, and it is received 19.5 MMT of wheat. The main region of wheat cultivation is Anatolia (center), GAP (south-east), Thrace (the east of Balkan) and Cukurova. In 2017 Turkey was started to carry out the new program of subsidizing of agricultural [National Agriculture Project]. The project aspires to develop versatile agricultural of Turkey, and to raise productivity, and to reduce area with an intensive irrigation as rice and grain on the slopes. According to a new map, Turkey is divided for 941 agricultural pools depending on a climate and category of soil to subsidize 19 grain crops in each pool. GOT does bonus to producers for the certificated seeds, fuel and fertilizers [for wheat: diesel – 130 TL/Hectare, fertilizers – 40 TL/Hectare]. In additional, MinFAL pays 50 TL for each growing ton of wheat [1\$ = 3.65 TL].

Consumption. Though the Minister declared that TGB [Turkish Grain Board] will not be the player on the grain market Turkish Grain Board has bought of 2 MMT of wheat in September 2017.

Trade. The wheat import in July-September 2017 was ≈700 thous. MT including 560 TMT of flour + 140 TMT of hard wheat. The basic suppliers are ruSSia [440 TMT], Ukraine [67 TMT] and Kazakhstan [60 TMT]. Dispute all problems with bordering areas of Iraq and Syria the Turkish milling sector support high level of export: export of wheat in July-September 2017 reached 870 thous. MT. The basic partners are Iraq [480 TMT] and Syria [73 TMT]. Export of Turkish pasta reaches 264 thous. MT or higher on above 15% in comparison with 2016. The main market are countries of Africa as Angola [39 TMT], Benin [29 TMT], Somali [28 TMT].

Wheat balance in Turkey (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	7.860	7.815	7.800
Yield, MT/HA	2.481	2.207	2.564
Beginning Stocks	2.767	3.118	1.327
Production	19.500	17.250	19.500
MY Import	4.382	4.533	5.000
Total Supply	26.649	24.901	25.827
Consumption	18.000	17.400	17.700
– Feed and Residual	1.200	700	1.000
– FSI consumption	16.800	16.700	16.700
MY Export	5.531	6.174	6.500
Ending Stocks	3.118	1.327	1.627

EGYPT

Shortage of currency constrains import.

Production. The full wheat production in 2017/18 is 8.1 MMT. The increasing in population, a fragmentation of land and city intrusion into the fertile lands of delta of Nile creates barriers for the horizontal expansion. The Ministry of agricultural [MARL] is concentrated for the vertical expansion.

Consumption. An estimation of purchases of local wheat volumes is 3.5÷3.7 MMT. The government buys local wheat April 15 to July 15 through four [4] agencies which is controlled by the Ministry of supply and internal trade [MOSIT]. The prices paid by the government for local wheat are 555÷575 EGP/ardeb [210÷218 \$/mt, 1 ardeb ≈ 150 kg] depending to a quality and a moisture. The full consumption of wheat in 2017/18 estimates of 19.7 MMT that is higher by 1.5% than 19.4 MMT in 2016/17. Consumption grows for account of food use which stimulates an increase in population be 2.5% per year. Egypt with population of 97 mio. man adds 2 mio. man per year. Plus of ≈5 mio. refugees from Iraq, Syria, Libya, Yemen and Sudan. The average growth of inflation in Egypt is of 31.6% per year. Inflation increases the prices.

Trade. Expected import is 12.0 MMT. Estimations can be revised down to 11.4 MMT by reason of the limited access to currency. The unique buyer is agency of MOSIT which buys wheat trough tenders. The largest basic suppliers in 2016/17 were ruSSia [4.47 MMT], Romania [1.26 MMT] and Ukraine [0.56 MMT]. The average purchase price on the CIF basis in 2016/17 was 205 \$/MT. GASC changed the requirements for proteins: from 12.0% to 12.5% for wheat from Black Sea pool, and from 11.5% to 12.0% for an American wheat to give more possibilities for Canadian wheat.

Wheat balance in Egypt (1000 HA, 1000 MT)

	2015/16 ^R	2016/17 ^E	2017/18 ^F
Area harvesting	1.260	1.260	1.260
Yield, MT/HA	6.429	6.429	6.429
Beginning Stocks	4.336	4.607	3.993
Production	8.100	8.100	8.100
MY Import	11.925	11.236	12.000
Total Supply	24.361	23.943	24.093
Consumption	19.200	19.400	19.700
– Feed and Residual	1.400	1.400	1.300
– FSI consumption	17.800	18.000	18.400
MY Export	554	550	550
Ending Stocks	4.607	3.993	3.843



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WHEAT TO GLUTEN PROCESSING

WHEAT AND WHEAT CLASSIFICATION

Wheat is a grain plant for kind of wheat [lat. *Triticum*, rus. пшеница], of the cereal family [lat. Gramineae, rus. злаковые]. Wheat grows in the countries with a temperate climate. The wheat grain is basic culture for preparation of grain flour, pasta, and flour confectionery.

Wheat classifies:

I. By intended purposes:

- **Modern grades**
- **Special grades**

The main modern grades of wheat:

- **Flour wheat** (lat. *Triticum aestivum*, rus. хлебная пшеница) is the most important kind of wheat which is basic for manufacturing of bread flour, pastries, and cookies etc.
- **Hard wheat** [лат. *Triticum durum*, англ. Durum wheat] is hard grade which is cultivated in droughty zones; it is cultivated since 1798; lead to a flour for the pasta manufacturing.

Some ancient grades of wheat are cultivated for the special purposes, for example:

- **Einkorn** [лат. *Triticum monococcum*, rus. эйнкорн] is the old kind of the Mediterranean wheat which was used during prehistoric times as fodder, and now is grown extremely seldom.
- **Emmer** [лат. *Triticum dicoccum*, англ. Эммер] is the old kind of the Eurasian wheat which is cultivated mainly as a bread cereal for preparation of breakfast and fodder; it compares with Einkorn grade.
- **Spelt** [лат. *Triticum spelta*, англ. спельта] is not widely cultivated but it is positioned as healthy food.

II. By time of sowing:

- **winter** [озимая]; and
- **spring** [весенняя].

Winter wheat is cultivated more in the World.

III. By wheat vital gluten:

- **soft** [мягкая]; and
- **hard** [твёрдая].

The spring wheat can be hard only whereas winter wheat can be both hard and soft. Flour received from hard grades of bread wheat has higher content of the wheat vital gluten and is more preferable in bakery products. Wheat of Durum and Macaroni grade has hardest grain that is very important for manufacturing of pasta.

WHEAT & WHEAT GLUTEN

Wheat gluten [rus. пшеничный глютен] is protein of wheat. The wheat gluten forms the long molecules which are insoluble in water. It gives typical structure for dough, and provides rising of dough for bread and pies because the carbonic gas received in the yeast fermentation process is kept in traps of gluten structure.

The gluten production is co-ordinated to production of the wheat starch delivered about equal values from the grain processing. Producers of the wheat starch name wheat vital gluten as sub-product whereas producers of the wheat vital starch are of opinion that wheat starch is sub-product.

The wheat gluten is isolated and dried by hot air, at moderate temperature and very carefully to support the functional properties of gluten. Gluten in the form of a dry powder can be added to the low-protein flour to improve its bread-baking qualities.

Improvement of quality of the bread wheat can be reached by three known ways:

- Mixing of hard flour and soft flour;
- Additive of the wheat vital gluten to flour; and
- Additive of the wheat vital gluten to dough.

Mixing of hard flour and soft flour. Traditional method of improving of the flour quality is mixing of hard and soft wheat. The most part of the European production is soft wheat whereas wheat from Canada, Australia and the USA is hard wheat. To receive a flour with specified functionality, less expensive and less qualitative European wheat mixes with more expensive and reach with proteins wheat imported from Canada.

Additive of the wheat vital gluten to flour. This trend is most pronounced in Europe. To provide alternative to wheat mixing, it is more than enough to add the wheat vital gluten to the bread flour of poor quality.

Additive of the wheat vital gluten to dough. The additive of the wheat vital gluten to flour is practiced in Europe, Australia and other regions of the World but it is very seldom in the North America. Availability of high proteins in wheat of the USA and Canada eliminates the requirement to add the wheat vital gluten in a flour. However it may be demand for the additional gluten for some kind of preparations or for improvement of properties of the received flour, and the additional gluten can be added in dough in the necessary doses.

PROPERTIES OF WHEAT GLUTEN

Definition of wheat gluten

Wheat gluten is cohesive [linking] viscous-elastic protein-like materials isolated from wheat flour both with the wheat starch as sub-product. Biological definition of wheat gluten: a complexes of original gluten-proteins. Glutens generated in the protein-contained dough from a wheat flour are a key for unique availability of wheat to manufacture of the fermentation products.

Standard for a wheat gluten

Wheat gluten is specified in the USA in the Codex International Standard for Wheat Gluten [2001] and approved by the U.S. Food & Drug Administration as GRAS [Generally Recognized as Safe] in accordance with 21 C.F.R. § 184.1322 for use it as the enhancer of dough, the assistant of forming, the stabilizer and thickener, the textured agent and agent for processing of surfaces on the levels not exceeding the good practices.

Codex International standard for wheat protein products including wheat gluten (Codex, 2001)

Description of the parameters	Index, DS
Protein [N x 6.25] Dry basis	≥80%
Moisture	≤ 10%
Ash	≤ 2.0%
Fat [Ether extractable]	≤ 2.0%
Fiber	≤ 1.5%

According to the requirements of the standards, the dried wheat gluten should contain not less than 80% proteins [N x 6.25] or not less than 75% [N x 5.7] and up to 10% of a moisture. Others are lipids, starched granules and insoluble fibers which are held by a protein matrix and are difficultly accessible to removal to raise the content of proteins in a structure.

Commercial wheat gluten

Commercial wheat gluten extracted from wheat or wheat flour and dried is a cream/tan-colored free-following powder of bland flavor. When hydrated, it regains virtually all of its originally functionality. Compositionally, it is a lipid-protein complex with some included starch. Wheat gluten is dried on the plant to the moisture content of ≤10% [DS ≥90%] because it will sale in the dry conditions.

Wheat gluten has yellow-brown or cream color, without foreign smells, doesn't crumble, and it is turned into cohesion viscous-elastic paste after mixing with a water, and should keep all original functionalities.

Typical composition of the commercial wheat gluten includes:

- 70÷80% crude proteins
- 6÷8% crude lipids
- 10÷14% углеводы
- 0.8÷1.4% minerals

Example of the specification of the commercial wheat gluten dried on the Flash dryer and on the Spray dryer is shown in the table below.

Comparison of Flash and Spray-Dried Wheat Gluten

Name of parameter	Flash-dried	Spray-dried
Protein [N x 5.7] DS	75.2%	76.0%
Moisture	8.2%	5.4%
Ach	1.0%	1.0%
Fat [Ether extractable]	1.8%	1.2%
Fibers	0.6%	0.6%
Carbohydrates	19.4%	19.9%
Energy (kcal/100 g)	370	378
Minerals (mg/100 g)		
- calcium	142.0	166.0
- iron	5.2	280.0
- phosphorus	260.0	5.7
- potassium	1000.0	106.0
- sodium	29.0	68.0

Wheat gluten is sold on the global markets under the name «*vital wheat gluten*».

Amino acid composition

It is very impotent the composition of amino acids for a definition of the wheat gluten quality.

Among the 10 essential amino acids required for human health that must be provided through the diet, the only amino acid limited in gluten is lysine, with some of the other essential amino acids being present in considerably higher amounts than the requirements in a single protein source. From a nutritional value of being able to provide balanced essential amino acids similar to other plant source proteins (rice and maize), gluten (or wheal proteins) is considered to be poorer quality than proteins from animal sources. However, gluten protein does contain high levels of the nonessential amino acid glutamine, which serves as an efficient utilizable source of α-amino nitrogen, to meet the demand for the synthesis of non-essential amino acids in the human body, as well as for the synthesis of other physiologically important nitrogen-containing compounds, which are essential for strengthening and repairing the body muscle.

Wheat gluten structure and properties

Wheat gluten delivers 80÷90% of the full content of the wheat gluten proteins which are contained in a wheat, and it presents the protein complex including of several hundreds of glycoproteins with various molecular weight in structure.

About half of proteins are mono-metric gliadins [*rus.* проламины], and the rest are disulfide cross-linked polypeptides forming poly-metric fraction of glutenins [*rus.* глутилоны] which the wide range of size up to tens millions of Dalton [Dalton, *Da* is off-system unit of mass equal of 1/12 weight of an isotope of carbon]. Both two groups form wheat gluten with the unique physical properties. The balance between these two parts is very important for a baking. Gliadins create adhesiveness and ability to stretching, and glutenins create elasticity.

Comparison of Wheat Gluten Composition

Gliadins	Glutenins
Highly extensible	Less extensible
Less elastic	Highly elastic
Soluble in alcohols	Insoluble in alcohols
Low in molecular weight	High in molecular weight
Intra-molecular bonds	Intra- and inter-molecular bonds

The gliadins fractions content mainly a single polypeptide chains of 30.000÷75.000 *Da*. Gliadins are linked one-to-another and with glutenin-proteins through not-covalent bonds and hydrophobic interconnections. Ω -gliadins have the big share of amino glutamic acids, proline, and phenyl-alanine which are overall \approx 80% of all rests. They form the so-called S-impooverished fraction of gliadins which contains a small or do not at all contain the sulphur-containing amino acids as cysteine or methionine.

In contrast, α -, β -, γ -glutenins have less proline, glutamine, and phenyl-alanine but have 2÷3 mol.% of cysteine or methionine. Cysteine is on the end of C-terminal, and is involved in intermolecular disulfide bonds with its weight, and is ranked in range of 30.000÷45.000 *Da*.

The poly-metric glutenins divide on a sub-group with High molecular weight [HMW] and on a sub-group with Low molecular weight [LMW].

HMW sub-group totals overall \approx 12% of all proteins in the wheat gluten. Their size is \geq 100.000 *Da*, and they are capable to form intermolecular networks giving a frame structure. Thus, HMW sub-group of poly-metric glutenins is responsible for providing of the viscous-elastic properties of gluten.

A LMW sub-group presents poly-metric glutenins which have amino acid structure and the structure similar α -, β - и γ -glutenins with hardly in higher molecular weight of 45.000 *Da*. Their ability to form intermolecular disulfide bonds one-to-another and/or with HMW-glutenins is very important to form glutenin macro-polymers.

Minor components: lipids

Much of the lipid content of the flour becomes associated with the gluten-proteins during the washing process. The gluten-proteins are largely hydrophobic in nature and the lipids bonds to the hydrophobic areas of the proteins as soon as they are repelled by the water used in the washing. Therefore the lipids are strongly bound to gluten-proteins and are removed with much more difficulty, and then they are removed from an original flour. The lipid content in gluten is primarily determined by the lipid content of the flour from which the gluten is produced and is unaffected by additional washing.

Although it is a minor component (<2 % free fats, but as high as 8% bound linked lipids), the lipids in gluten can effect its functional properties, flavor and quality (for example, shorten storage stability due to lipid oxidation). One ways to improve gluten quality with having a lower lipid content is to use salt during the dough mixing and washing process. The viscous-elastic properties of gluten processed by the added some salt water raise at an additive of 2 % NaCl or 0.5 % NH₄Cl with the reduction of lipid content to approximately half of the amount in the gluten produced by using water only.

Functional and sensory properties

Solubility and water holding capacity. The ability to obtain gluten in a relatively pure form with its functionality retained by such a simple process is due to gluten's unique properties.

An increasing awareness of wheat gluten's unique structural and functional properties as potential for an expanding diversity of application.

Experimental kitchen

The wheat vital gluten is an invisible part of wheat flour. How to make so that wheat gluten has shown the viable properties? It is enough to make simple experiment even in the conditions of kitchen.

Knead a small slice of the dough by hands under a water stream from a tap. It is necessary to apply water economically. Starch will leave together with water, and the dough consistently to turn in wheat gluten. The remained dough by the consistence will remind a chewing gum. Than stretch a lump, will not burst yet. Lengthening specifies in quality of a flour.

MANUFACTURING OF WHEAT GLUTEN

Raw material for manufacturing of wheat gluten

The wheat grain as in a case with corn or wheat flour can be used as raw materials for manufacture of wheat vital gluten. As a rule, the manufacturers of the wheat vital gluten prefer to buy a flour on mills.

Manufacturing of wheat gluten from wheat grain

There are three [3] principal different methods to manufacture wheat vital gluten from grains:

- fermentative method;
- method of wet separation starch/gluten; and
- method of a wet wheat milling.

Fermentation method. The oldest method of the wheat starch extraction is fermentation process [other name is Hall process] in which the grain is steeped in water, and than added enzymes. Process of fermentation is in progress 1÷2 weeks in tanks changing a mix into a mash, and than the modified starch is washed out of gluten.

Wet separation method. Another method known as the Alsatian process involves steeping the wheat, wet milling and washing the starch without prior fermentation.

Wet milling method. Any cereal can be processed by wet milling process which requires only a modification of the equipment or technology of wet corn milling process. During the Second World war, wheat starch was produced by a modified wet milling process, which was developed by the American Northern Regional Research Laboratory. Wheat germs are not extracted at the wet milling process of wheat; it is the main product of dry degermination.

Manufacturing of wheat flour

It is necessary to produce a flour prior to start process of starch/gluten separation in a flour. Wheat is used as a raw material for the production of wheat flour. There is no any uniform system of grain standards to manufacture wheat flour. There is only a definition of «*average standard quality*». Thus, the wheat grain of average standard quality contains 79÷85% endosperms (carbohydrates + protein), 2% germs., and 12% bran.

Average Composition of Wheat and Wheat Flour

Component	Wheat Grain	Wheat Flour
Carbohydrate	≥ 70%	71.7%
Protein	9p15%	13.0%
Fat	2p2.2%	---
Fiber	2p2.5%	1.0%
Ash	≤ 1.8%	0.75%
Moisture	9p13%	13.5%

The protein content is not at the heart of the grain quality classification in developed countries, although taken into account the value for high-quality millers, especially for hard wheat varieties. In some countries (Austria, Hungary) the basis of the standardization of wheat is still the amount of gluten.

The content of proteins in grains is different. Wheat vital gluten is a group of proteins in wheat of small size glycoproteins (gliadins and glutenins) contained exclusively in grain crops, mainly in wheat, but also in barley, rye and oats. There is a direct relationship between the content of proteins and wheat vital gluten, but it is quite relative. Wheat vital gluten represents 80÷90% of proteins in wheat.

Wheat vital gluten is valued for its viscoelastic properties, providing elasticity of flour, ant it allows to ferment bread giving volume, elastic and spongy consistency of bread and baked masses. Content of wheat vital gluten in grain affects the degree of strength of wheat. The more wheat vital gluten, the higher the quality.

The Ukrainian classification of wheat quality is based on the content of wheat vital gluten [DSTU 3768-98]. GOST 13568.1-68 is still valid to determine wheat vital gluten. The analysis of protein content in wheat by the Ukrainian [GOST 10846-91] and the foreign standards [ICC 105/1] is the same fairly simple method of Kieldahl. However, the protein content is determined for grain with moisture content of 14% in Ukraine and Europe and with moisture content of 12% in the USA and Canada. The index of protein content in wheat according to the American requirements will be lower, than at the analysis in Ukraine. The buyer makes analysis when Ukrainian wheat is imported in your country. It may differ from the Ukrainian analysis more than 0.5%, and it is enough to raise the issue of price reduction.

Western commercial varieties of wheat contain 9÷15% of proteins with a moisture content of 14%. The damaged wheat grain may contain a significant amount of the wheat vital gluten and proteins, but their quality will be so low that it will not ensure the normal germination of the dough during baking. Therefore, grain exchanges of developed countries stipulate in advance in the contracts for what purposes the grain is intended. Wheat is divided usually into 3 groups: soft for wide use; flour for the flour production; and forage to feed a cattle.

Wheat flour. The extraction of flour from wheat is ranged in 73÷77% resulting in a feed value of 23÷27% (25% average). The feed manufacturing in additional to bran receives a significant part of the endosperm. Wheat flour is crush to the desired granulometric composition, and it is used for a future processing.

Manufacturing of wheat gluten from wheat flour

Gluten from wheat flour was first obtained more than 300 years ago by the Italians. The process called Beccari presented a washing of wheat dough in water or salt solution. The cohesive gluten mass with a protein content of ≈75% was output. The discovery which could easily be reproduced in the kitchen became the basis of the major grain industry, which uses millions of tons of wheat per year in America, Europe, Australia and Asia.

Wheat gluten manufacturing from flour is based on the effective repetition of the Beccari experience and presents a method of wet separation (not wet milling). The technological process of wheat gluten production from flour consists of several key steps:

1. The first step is mixing wheat flour with water to produce dough or mash. In contrast to the mash, the dough can be postponed for a time, then to fill it with water to product the gluten agglomerate.
2. Protein fractions are separated from the starch on the centrifuge, hydrocyclone or decanter.
3. At the final stage, gluten agglomerate is dried, crushed and sieved through a sieves to produce gluten in the form of powder.

The diagram below shows the typical processes of the wheat gluten production from flour.

Commercial enterprises use next technologies to produce wheat starch and wheat gluten from flour:

- Martin process
- Batter Systems
- Scandinavian] process
- Alfa-Laval process
- Hydrocyclone process

A number of processes have evolved over the years to produce gluten. Generally, gluten extraction from wheat flour is based on either a dough system or a batter system.

The processes have varied considerably in terms of starting materials and other parameters, for example, whole wheat or flour, hard or soft wheal; consistency of wheat flour/water mixture [dough vs. batter]; dispersion method [water or other solvent]; and types of equipment for achieving starch and gluten separation. Obviously, a major consideration is the wheat available to a given plant. Different wheat vary widely in the amount of gluten they can yield; up to 17% commercial gluten can be recovered from North American spring wheat while softer European wheat may yield 9÷10% gluten.

When poor-quality flour is the starting material, the enzymes pentosanases and cellulases may be utilized to enhance gluten yield and starch recovery. Aside from considerations of availability and quality of the starting material other factors involved in wheat gluten production include the method of processing wheat starch as a co-product in a ratio of up to 6:1, starch : gluten; handling of effluent water from manufacturing: gluten yields; water balance; pH of flour slurry; and capital and operating costs.

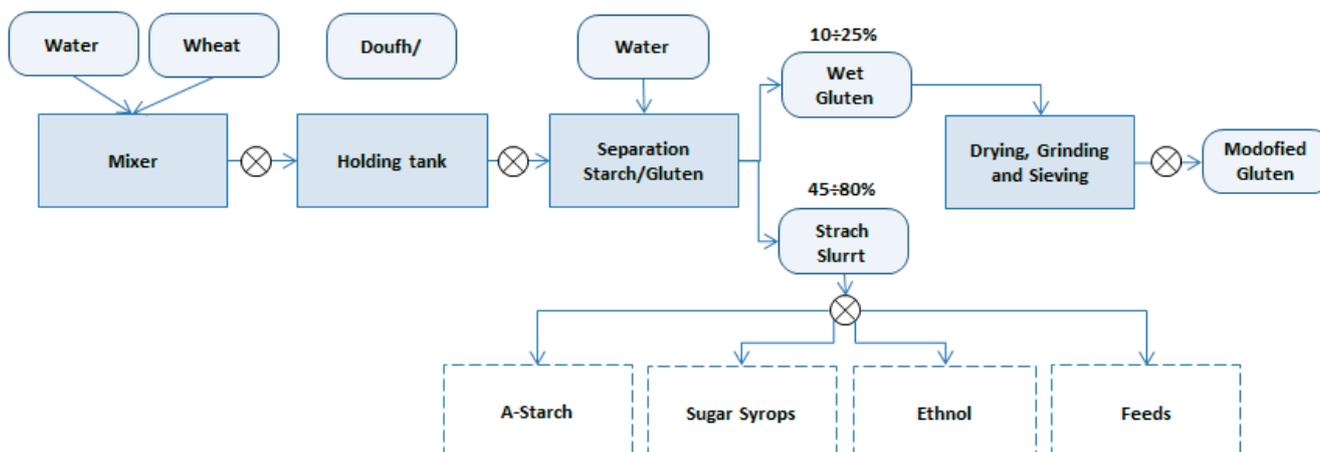
Martin process

The Martin process appears to be the oldest for wheat gluten recovery, originating in Paris in 1835. and until recently has been the most widely used method. Five basic steps are involved:

- mixing flour and water [about 2:1] into a dough;
- washing out the starch;
- drying the recovered gluten;
- refining the starch; and
- drying the starch.

The aim of mixing is to obtain a smooth, developed, well-hydrated dough. The water is usually 20 °C but may be 35 °C to speed dough development and should contain some mineral salts, because soft water causes the gluten to be soft or slimy

Block-scheme of the typical processing for Wheat Gluten



The hydrated dough is then subjected to a washing stage: sufficient water is used to wash the starch from the dough, while it is kneaded or rolled, without dispersing or breaking the gluten into small pieces. Many devices have been developed for this purpose, including ribbon blenders, rotation drums, twin screw troughs, and agitator vessels. Wet gluten is then screened from the starch liquor utilizing rotary or vibrating screens. The process is controlled in such a manner that the gluten leaving the washer has a minimum protein content of 75% on a dry solids basis. The Martin process has the advantage of being well suited for low protein [7÷10%], weak flour; however, a major disadvantage is that large quantities of operational water are required in production, complicating starch recovery as well as posing a substantial effluent-handling problem.

Batter Systems

The batter process is practiced in various forms and is the mainstay of the industry today. In this process, flour and water are mixed in roughly equal proportions to form a smooth soft dough with a solids content of 48÷55%. When fully developed, more water is added to the system with continued mixing, which causes the gluten to coalesce into curds. The curds are collected on a gyrating screen and thus separated from the starch liquor. Further water additions and screening are carried out to achieve a 75% protein content of the gluten on DS.

Raisio / Alfa-Laval Process

A variation of the batter process is the Raisio / Alfa-Laval method. A concept of this method was to separate the constituent parts in their natural sequence of specific gravity. In this system, flour and water are combined in a ratio of 5÷6 : 5÷10 depending on the flour type used. Mixing is done at high shear in a pin mill to obtain a smooth dispersion. A horizontal decanting centrifuge then separates the dispersed mixture into starch and gluten fractions. The gluten fraction coalesces, allowing a separation by screening. Advantages of this process include high throughput and low water need.

Hydrocyclone Process

The company KSH, the Netherlands has described a batter process utilizing hydrocyclones. A batter is mixed using recycled wash water and flour, which is then directly introduced into a series of hydrocyclones. The «A» starch [prime or heavy starch] and bran fiber are washed out in the underflow, and the fiber is removed. A gluten-rich fraction comes out of the overflow. This fraction is mixed with water and/or recycled process water and the agglomerated heated air, now laden with moisture, is removed by a fan.

Since the starting feed stock has a solids content of about 12÷14%, nearly 6 metric tons of water must be evaporated for every ton of dry gluten produced.

The starting wet wheat gluten must be uniformly incorporated in a dispersion of appropriate viscosity for successful spray-drying. Ammonia or acetic acid are used as dispersing agents: ammonia has the advantage of being quickly flashed off from the dryer vent. Carbon dioxide apparently has also been used to form gluten dispersions. Spray-dried gluten has excellent functionality, but this drying method has not been widely used because water removal is costly and the quality of spray-dried gluten is not sufficiently better than that of the flash-dried product to justify its cost.

APPLICATIONS OF WHEAT GLUTEN

The unique properties of wheat gluten have led to its increased utilization in a wide array of applications—food as well as nonfood. As noted previously, wheat gluten has the ability to form a viscoelastic mass when fully hydrated; this along with other properties such as film-forming ability for gas retention, thermosetting properties for structural rigidity, water absorption, and retention capacity for product softness accounts for much of its functionality in bakery foods and some other product applications.

Hydrated wheat gluten may be extruded, texturized, or drawn into fibers and spun; the adhesive, cohesive, film-forming characteristics and thermosetting properties form the basis of many applications in various meat, poultry, and fish products. Wheat gluten may also be added to some foods to increase its protein content in order to meet nutritional protein enhancement. A discussion of wheat gluten applications in some food products, with an emphasis on cereal-based foods, is provided below.

Overall Usage

Comparison of End Uses of Wheat Gluten

End use	1980	1995	AUS	NA	EC
Baking	77	46	54.0	83.0	16.5
Milling	4	35	8.9	0.5	66.0
Cereals	3	1	11.4	1.0	---
Snacks	---	1	0.8	1.8	---
Breading-batter	---	1	---	0.1	---
Meats	---	1	8.4	1.0	---
Pet-foods	10	12	12.7	12.0	13.5
Other animal feed	4	1	0.4	---	---
Other	2	2	3.4	0.6	4.0
Total (%)	100	100	100	100	100

Top-20 of Importers of Wheat Gluten in 2015

#	Country	MT	th. US\$	US\$/t
1	USA	193.553	346.307	1789
2	Norway	153.025	223.208	1459
3	Netherland	108.058	133.616	1237
4	Belgium	80.393	105.427	1311
5	France	48.882	61.358	1255
6	Great British	42.997	57.361	1334
7	Chili	23.008	33.955	1476
8	Germany	20.472	28.101	1373
9	Japan	19.796	36.805	1859
10	Turkey	19.793	27.320	1380
11	Italy	19.230	23.750	1235
12	Brazil	18.361	27.925	1521
13	Spain	16.074	19.404	1207
14	Australia	12.750	16.675	1308
15	Canada	11.499	20.044	1743
16	Greece	11.421	16.349	1432
17	Denmark	10.902	15.841	1453
18	Thailand	9.467	14.982	1582
19	Vietnam	9.360	15.604	1667
20	Hungary	6.748	8.997	1333
	Other	129.212		
131	World	965.000		1475

Top-20 of exporters of Wheat Gluten in 2015

#	Country	MT	th. US\$	US\$/t
1	Belgium	149.003	207.679	1394
2	China	148.953	203.108	1364
3	France	122.889	177.826	1447
4	Austria	108.207	186.334	1722
5	Germany	195.609	160.827	822
6	Lithuania	38.166	54.626	1431
7	ruSSia	32.630	44.148	1353
8	Netherland	32.056	44.600	1391
9	Poland	22.963	31.520	1373
10	Great British	13.672	21.836	1597
11	Italy	10.986	19.169	1745
12	USA	6.443	12.056	1871
13	Sweden	6.429	9.132	1420
14	Canada	4.525	10.674	2359
15	Korea of	3.322	5.294	1594
16	Czech	2.284	3.305	1447
17	Argentina	1.962	3.107	1584
18	South Africa	1.163	761	654
19	Portugal	634	230	363
20	Serbia	536	761	1420
	Other	14.068		
68	World	916.500		1326

Import of Wheat Gluten to Ukraine

#	Year	MT	th. US\$	US\$/t
	2001	93	155.5	1665
	2002	86	160.1	1867
	2003	59	97.7	1662
	2004	211	230.6	1095
	2005	460	431.6	939
	2006	500	567.7	1135
	2007	550	787.2	1430
	2008	1.157	1840.9	1591
	2009	1.319	1742.0	1321
	2010	804	1268.4	1578
	2011	1.016	1620.8	1596
	2012	1.060	1631.3	1539
	2013	1.118	1852.9	1657
	2014	1.036	1680.7	1622
	2015	873	1239.1	1420
	2016			

Export of Wheat Gluten from Ukraine

#	Year	MT	th. US\$	US\$/t
	2001	---	---	---
	2002	---	---	---
	2003	---	---	---
	2004	---	---	---
	2005	10	10.5	1050
	2006	---	---	---
	2007	---	---	---
	2008	---	---	---
	2009	20	29.6	1480
	2010	10	17.6	1765
	2011	---	---	---
	2012	---	---	---
	2013	---	---	---
	2014	---	---	---
	2015	---	---	---
	2016			

LOW ABOUT SAFETY AND HYGIENE OF FEEDS

Adopting of the Law

The Parliament of Ukraine adopted the Law 2264-19 «On Safety and Hygiene of Feeds» on December 21st, 2017. The President signed it into Law on January 17th, 2018. The Law was officially published and became a legally binding document on January 19th, 2018. According to the Law it will enter into full force on January 19th, 2020.

Purpose of the Low

The Law encompasses certain provisions of EU Directive No 882/2004 on official controls performed to ensure the verification of compliance with feed and food laws, animal health and animal welfare rules; Regulation (EC) No 1831/2003 laying down requirements for feed hygiene; Directive 97/78/EC laying down the principles governing the organization of veterinary checks on products entering the EU from third countries, REGULATION (EC) No 767/2009 on the marketing and use of feeds, and some other Directives and regulations. Unlike scattered EU legislation, Ukrainian food law provides a one-source reference for businesses willing to export animal feeds to Ukraine.

Main provisions of the law

Ukrainian Law imposes regulations for feeds and feed ingredients production and trade. A simplified set of regulations is imposed on feeds for non-productive animals (pets, fur animals, circus and zoo animals, etc.), agricultural animals for own consumption, direct sales of basic feeds (below established limits) and retail sales of pet food. Another stricter set of regulations is imposed on feeds for agricultural (productive) animals.

The law provides multiple definitions for feeds, feed additives, mixed feeds, feed hygiene, veterinary feeds, and circulation of feed products on the market. It introduces new to Ukraine definitions of feed product recall and consequent utilization procedures for feeds in cases when there are risks for animal and human safety.

The law prohibits sales of feeds containing feed additives not registered in Ukraine. It is also prohibits sales of feeds produced on unregistered facilities. The law requires HACCP procedures or simplified HACCP procedures to be introduced by all market operators. HACCP introduction must be accomplished by all market operators before law enters full force on January 19th, 2020.

The Law established «step forward» – «step back» traceability requirement for feeds.

The law also spelled-out existing requirements for registration of food additives. Previously the applicant needed to contact the State Scientific-Research Control Institute of Veterinary Medicinal Products and Feed Additives for registration procedures. A new simplified registration procedure is also established. It can be used if the feed additive is registered by countries or international organizations that use procedures recognized as equivalent to those implemented in Ukraine. (Note, since 2014 Ukraine accepts all food products, manufactured at EU-approved facilities to be equivalent to Ukrainian requirements).

Labeling

Feed labeling requirements are very detailed and mimic EU Directive 767/2009. The label needs to contain:

- feed type (full-ration feed, partial or full milk replacement, mineral feed, auxiliary feed, feed mix etc.);
- producer's or importer's contact information;
- batch number (if available);
- weight, moisture content (if known); and
- rationing.

There are also separate requirements for bulk feeds, feed mixes, feeds for special dietary purposes, aroma mixes, feed additives and premixes (if sold separately) and feeds imported for scientific purposes. Retail pet food packaging needs to contain a free phone number or any other free of charge way to get additional information on food additives and food materials contained in the package.

1. **The State Catalog of Feed Materials** contains categories of feed materials, names and registration numbers of feed materials, their descriptions, composition and glossary of technological purposes. Introduction of feed material categories will allow showing these categories on the labels instead of specific materials.
2. **The State Register for Feed Trait Statements for Special Dietary Purposes** identifies feed purposes (dietary); feed declarations, list of species subject to intended use, feeding periods (durations) and other information. A special dossier is required from the feed originator to register a Statement (dietary claim) in the register.

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Equestrian sport

Equestrian sport is conception which is understood as sports with participation of horses. The International federation of equestrian sport FEI [Fédération Equestre Internationale] recognized officially the following kind of equestrian sport – dressage, show jumping, triathlon, rining, driving, races on distance, equestrian vaulting.

The Olympic games. The equestrian sport was been first included to the programs of the Olympic games in 1990. Since V Olympic games in Stockholm, the equestrian sport is present on all Olympic games.

World Equestrian Games. FEI World Equestrian Games is the biggest international championship on the equestrian sport organized by FEI which is carried out form 1990 each of four [4] years when there is no summer Olympic games [2018 – Bromon, Canada].

Races of horses on distance

Races of horses on distance is discipline of equestrian sport in which top ranking is defined by the best time of passage of a distance against the conditions of preservation in norm of physiological indicators. The rules of contest for horse races is considerably differ in the different countries. Horse races can be carried out with a speed restriction or without a speed restriction, and for various distances from 10 km to 1000 miles [160 km].

Horse races originate in Arabia where the Arabian fast horses began to test in races for desert passage. The distanced tests of horse have received peculiar popularity in the USA and the Great British in 1930-th. when carrying out of races has been ordered and began to pass under veterinary control. However official date of birth of modern races considers 1955 when Wendell Roby with group of horseman has overcome the most complicated way from the Tagus lake to the Auburns city, California through a mountain ridge Sierra-Nevada less than for one day. Since then sports races on 1000 miles [160 km] are carried out regularly and called Tevis Cup. It is one of the most prestigious contest on races in the World. The Races of horses on distance are recognized by FEI as kind of equestrian sports since 1978.

The world championship. The first championship was been spent in Rome in 1987, and the second in USA in 1988, and in Stockholm in 1990, in United Arabian Emirates in 1998 ... in Shamorin [Slovakia] in 2016, and in Valledzhio-sul-Mincho [Italy] in 2017.

Horse stakes and horse races

Contrary to the occurring error, horse stakes and horse races is not equestrian sport, and it is test of horse for playfulness and speed.

Horse stakes. Following the result of stakes, it is made a decision for the further rearing/use of breeds. As a rule, stakes are carried out on hippodromes where are staked on an outcome through a tote.

Stakes are carried out in different age categories. Thoroughbred saddle horses start to skip at the age of 1.5 years. The most important stakes in life of a horse is Derby for stallions and Oaks for mares which take place for classical distance of 1.5 miles [2400 m] or 10 in three-year age furlong [1 furlong = 1/8 mile ≈ 201.17 m; furlong is used in stakes of Great British, Ireland and the USA].



Races. Races is tests of horses of the trotter breeds for playfulness in races by trot. It is usually tested horses harnessed in a racing sulky [special two-wheeled carriage intended for races]. Trotting races can carry out under saddle but it is very seldom.



There is an clear differentiation between stakes and races. Trotters of special raised breed carry out in races which is capable to run by long trot. Horseman who sit on a racing sulky [light two-wheeled carriage] operates trotters. It is not possible to say that Jockey operates trotters because jockey has not any relationship to races, and he has other specialization, and he has not able to operate trotters. Saddle horses participate in stakes, and they gallop during stakes, and the jockey who sit in saddle operates horse. It is not possible to say that trotter has won a stakes because trotters do not participate in stakes.

Derby

Derby is the main prize in races and stakes tests on a hippodrome. The «Derby» name occurs from Derby which is established in Epsom city [Great British, near to London] on a hippodrome «Epsom Downs» which received the name from 12th Earl of Derby founded stakes in 1780 on a distance in 1.5 miles [2414 m] for horses which is more 3th years and thoroughbred saddle breed

Staking Derby is a classical and one of the main stakes in the life of each 3th year horse. The great Staking Derbies in the World are considered:

- *Epsom Derby* which is carried out in Epsom, England. The main prize is English «The Gold Crown» which is one of three oldest classical prizes. The horse who has won three crown [Triple Crown] is called three times as crowned. Crown of Epsom Derby is the main from three prizes. Epsom Derby is national event in England collecting on tribunes over 400 thousand man.
- *Kentucky Derby* is carried out on hippodrome «Cherchill Downs» in Louisville [Kentucky, USA]. Also as well as Epsom Derby in England, Kentucky Derby is one of three main stakes to catch an American triple crown. Other two crowns include: *Belmont Stakes* – a distance of 1.5 miles, are carried out on the stadium of Belmont Park Race Track in New York since 1867, and *Preakness Stakes* – a distance of $1 \frac{3}{16}$ miles, are carried out on the hippodrome Pimlico Race Track in Baltimore, Maryland since 1873.

Racing Derby. When the races of trotters became same popular as stakes, it decided to found for them a Derby prize. Racing Derby is one on the maim event in life of a trotter. However the distance and age of the horse participating in racing Derby is various in the different countries:

- *USA.* Trotters ripen early and find the best form already in 3 years. Therefore Derby carry out for 3th years horses, and they run a short distance of 1 mile. The largest racing Derby. The largest racing Derby in USA is International Harness Races. Any trotter of the World can take participation in Derby.
- *Europe.* The largest racing Derby in Europe is European Derby which is carried out every year on the different hippodromes of the countries of European association of trotters. Distance is 2100 meters. Trotter born in Europe can take participation in the European Derby only. The late ripening trotters of the French breeds dominate on hippodromes. Trotters 4th years take participation in Derby but the record for participation begins with age of 1.5 years.

Road to Kentucky Oaks 2018

Kentucky Oaks is annual stakes of three years mares which is carried out since 1985 every year in first Friday of May in Louisville, Kentucky on the hippodrome «Churchill Downs».

Road to Kentucky Oaks is a system of points by which participations of stakes can apply for participation in the main round of Kentucky Oaks. Stakes begin in September 2017 when the mares have two years old, and it go on up to April 2018 when the horses will have three years old. The best of four [4] horses which have the greatest quantity of point will take participation in the main round which will carry out in May 4, 2018 on a hippodrome «Churchill Downs», Louisville, Kentucky.

It is ordered 28 horses for participation in stakes Kentucky Derby for 2017/2018 season.



Road to Kentucky Derby 2018

Kentucky Derby is annual stakes of three years mares which is carried out since 1875 every year in first Saturday of May in Louisville, Kentucky on the hippodrome «Churchill Downs».

Road Kentucky Derby is a system of points by which participations of stakes can apply for participation in the main round of Kentucky Derby which will carry out in May 5, 2018 on a hippodrome «Churchill Downs», Louisville, Kentucky.

There is three independent ways to obtain a qualification to take participation in the main round: The main way, Japanese road, New European road

The main way

The main way is developed for the North America and consists of 34 rounds: 20 – preparatory season, 14 – series of champions

Stakes begin in September 2017 when the horses have two years old, and it go on up to April 2018 when the horses will have three years old. The best of eighteen [4] horses which have the greatest quantity of point will considerate as passed qualification and will admit to the main round which will carry out in May 5, 2018.

Preparatory season. Preparatory season was from September 16, 2017 to February 19, 2018 and included 20 rounds [Delta Downs Jackpot which should pass in November 18, 2017 was been canceled by reason of hurricane].

Champion series. Champion series consist two runs each of which includes 7 rounds. The first run passes from February 17 to March 25, and second from March 24 to April 14, 2018.

The prize fund sets for each round which size in progress to the main round of Derby. Prize fund for a preparatory run is \$ 100÷500 thous., for champion series 1 run is \$ 350÷900 thous., for 2 run is \$ 750÷1000 thous. First finishers receive points in each round: [1] – 10, [2] – 4, [3] – 2, [4] – 1 points.

Points to first finishers

Rounds	1	2	3	4
preparatory season	10	4	2	1
series of champions 1 run	50	20	10	5
series of champions 2 run	100	40	20	10

Table of qualifications of top-4 for the main road

#	Horse	Trainer	Point	Prize
1	Audible	Todd Pletcher	110	\$ 803250
2	Noble Indy	Todd Pletcher	110	\$ 640000
3	Mendelssohn	Aidan O’Brien	100	\$ 1947299
4	Bolt d’Oro	Mick Ruia	64	\$ 780000

)* Points by result of 30 rounds of 34 rounds

Japanese road

Japanese road consists of 3 round in Japan. Third round Springboard was added to Japanese road in 2018. Japanese road to Kentucky Derby in intended to provide a place in the middle of lineup in a starting of the main round Derby. If the winner of series rejects invitation its place offer to the second [2] finishers etc. to four [4] finisher. If any of four finishers will not accept invitation this place in a starting lineup will return to horses from the main road to Derby.

Points to first finishers

Rounds	1	2	3	4
2 rounds in 2017	10	4	2	1
1 round in 2018	30	12	6	3

Table of qualifications of top-4 for the Japanese road

#	Horse	Trainer	Point	Prize
1	Sumahama	R. Takahashi	30	\$ 291287
2	Ruggero	Y. Shikato	16	\$ 220861
3	Taiki Ferveur	M. Makiura	12	\$ 240689
4	Le vent Se Leve	K. Hagivara	10	\$ 463935

)* Points by result of 3 rounds of 3 rounds



New European Road

New European road consists 7 rounds in England, Ireland and France – 4 rounds on peat + 3 round on synthetic covering. New European road is designed to similarly to Japanese road and intended to provide the place in starting round on Kentucky Derby in May 5. If any of four best finishers does not accept the invitation the best horses of the main road will be in starting gate on Louisville in May 5, 2018.

Points to first finishers

Rounds	1	2	3	4
4 rounds in 2017	10	4	2	1
first 2 rounds in 2018	20	8	4	2
last 1 round in 2018	30	12	6	3

Table of qualifications of top-4 for the European road

#	Horse	Trainer	Point	Prize
1	Gronkowski	Jeremy Nosedo	50	\$ 99945
2	Mendelssohn	Aidan O’Brain	20	\$ 1947299
3	Saxon Warrior	Aidan O’Brain	20	\$ 245017
4	Roaring Lion	John Gosden	14	\$ 136807

)* Points by result of 7 rounds of 7 rounds

Main round

148th start of Kentucky Derby will be in May 5, 2018. The guaranteed prize to the winner presented by Woodford Reserve will make \$ 2 millions. The prize fund of Churchill Downs is assigned to stimulate additional international interest to the biggest stakes in the United States.

Churchill Down presents Japanese road one year ago to provide a potential input on Kentucky Derby to the horses who are based in Japan. The way has extended on European jockey in this year. Initiatives on creation of a Road map for participation of horses from Europe in the biggest stakes of America and expansion of a current series in Japan have found gratitude.

The starting gate of historical track of a hippodrome «Churchill Down» will be open in May 5, and twenty [20] of preferable horses in 148th times in classical stakes on 1 mile will struggle for the right to be best: 16 horses of the USA + 2 horses of Japan + 2 horses of Europe. Now any European or Japanese horse has the right to apply for the one [1] mile of classical dirt to compete in new series. Thus Kentucky Derby confirm the status of the International contests in this year.



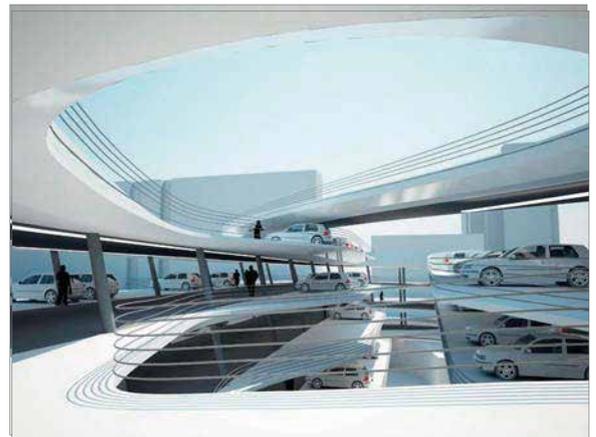
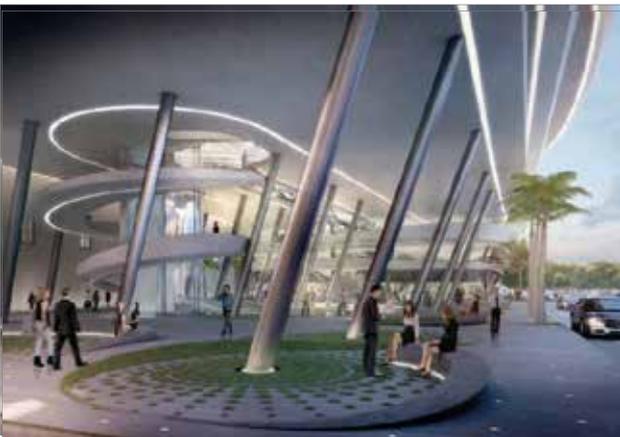


ZAHRA HADID



Collins Park garage, 24.100 m². Miami beach, 2012.

Miami beach suffers from a lack of Parking spaces due to the large influx of visitors.
The city has commissioned a project to improve infrastructure and residential real estate.
One of the requirements was to provide additional Parking, strategic approach and creative design.



INNOVATION IN BEVERAGES

Coca-Cola is to launched a new rang of drinks

Coca-Cola European Partners (CCEP) is to launch its first-ever range of plant-based drinks, as it looks to tap into the growing health and wellness trend.

Available in 250ml bottles, AdeZ is a dairy-free smoothie that contains seeds, fruit juices and vitamins and is designed to be consumed on-the-go.

Simon Harrison, customer marketing director GB at CCEP, said: «Consumers are increasingly conscious of their nutritional choices and lead busy lives – almost half are more likely to buy an item if they know the nutritional information.»

AdeZ will launch at the end of March with three flavor variants:

- Amazing Almond Mango-Passionfruit;
- Mighty Oat Strawberry-Banana; and
- Courageous Coconut Berry.



The consumer are looking for more functional drinks that taste great, which is why the launch of AdeZ in GB will provide an opportunity for retailers to meet this consumer demand.

The launch will be supported by a marketing campaign, including consumer advertising, digital and public relations targeting millennials – the demographic of the population typically born between the 1980s and early 2000s.

Originating in Argentina in 1988, the AdeZ brand was acquired by Coca-Cola from Unilever in March last year.

The launch is part of CCEP’s plan to «evolve» the business into a «total beverage company» to offer consumers more choice, such as healthy options as a counterpart to its traditional soft drinks brands.

Plant-based drinks – made with seeds such as almond, rice, and oats – are increasingly popular in the UK, with the emerging category growing by 10% last year.

Nestlé Water signals major rebranding

In February 2018 Poland Springs and five other regional brands are part of Nestlé Waters North America’s rebranding [Stamford, Kentucky, NWN]. Rebranding rides the sparkling water surge through a major packaging redesign for 25 SKUs across six regional brands featuring new products, the brand’s debut in cans and a proprietary new bottle.

Consumer thirst for bottled water beverages appears unabated, but which subcategory within the segment is seeing the highest flow? That would be sparkling waters; according to Euromonitor, the sparkling water category grew 70% from 2011-2016 and is expected to reach \$3.1 billion by 2022.

Nestlé Waters North America (NWN), Stamford, CT, is making a timely, bigger splash in that rising market with a major rebranding anchored by all-new packaging that reaches store shelves after mid-March.



The brand's new sparkling water portfolio encompasses regional brands Poland Spring, Deer Park, Zephyrhills, Ozarka, Ice Mountain and Arrowhead and features 10 new flavors, a bold new bottle design and the company’s first canned products.

Proprietary bottle design: a sleek, elegant PET bottle design that resembles vintage glass, is more comfortable to hold and highlights the movement of sparkling bubbles. Eye-catching label: more prominent branding and fruit imagery, as well as a new colored cap to accentuate visual brand cues and distinguish from competitors. Bold new case pack visuals: vibrant and colorful fruit graphics designed to capture attention on shelf and highlight flavor varieties. Bottle sizes are 20 oz, 0.5 L and 1 L.

With these dramatic changes, Nestlé Waters hopes to nearly double the number of Regional Spring Water Sparkling households by 2020 as compared to the number of households in 2016. The rebranding of new packaging will reach shelves of shops to the middle of March 2018.

Eco 4-Pack innovative packing for the

Tea is both a product and a beverage steeped in history and traditions both ancient and new. And while it traces its roots back to more than a millennia BC, creative and entrepreneurial types continue to reinvent it for a new generation of devotees using exclusive sources, unusual flavors and of course novel packaging. Exemplary of the latter is a new packaged format from **Vessl, Inc.** Tempe, AZ, when its Tea of a Kind (TOAK) brand introduced a one-of-a-kind «Eco 4-Pack» that may be the most unusual multipack of tea or any beverage that you've seen.

The single water-filled bottle is sealed with a patented, pressurized «Vessl» cap that contains liquid ingredients comprising all-natural flavors, real brewed tea and powerful antioxidants. The concentrated liquid is preserved inside an oxygen depleted, nitrogen-flushed and pressurized Vessl cap that's sealed to protect the freshly brewed tea against UV light and oxidation that typically degrade flavor, color, aroma and antioxidants' potency in traditional ready-to-drink bottled teas. The products have tested viable for a 5-year shelf life.



Unlike other ingredient containing specialty caps that require an extra step to open, the consumer twists the Vessl cap off as any normal cap. That motion opens a valve inside to release the ingredients directly into the bottle filled with 16oz of purified water. «Releases» is an understatement, the ingredients literally jet under 100 psi of nitrogen pressure, injecting a strong dose of product and consumer interaction into the highly visual process. After use, consumers refill the bottle with water and screw on a new cap for a fresh serving.

Versus a true 4-bottle multipack, the space-saving Eco 4-pack carton contains a single capped PET bottle and three Vessl cap refills (bundled and sealed together with clear film) that all fit into less than half the space of two bottles. Vessl, Inc. has the global licensing and use rights to the Vessl technology. The Tea of a Kind Eco 4-Pack was launched last year at select stores in Arizona, selling for \$ 6.99 compared to a single bottles priced at round \$ 2.29 each. It offers die-cut windows protected by clear plastic inserts.

Anheuser-Busch launches foil-top cans

A foil covering atop an Anheuser-Busch beer can adds a premium marketing element, as well as an added layer of protection to ensure a pristine drinking experience. Leveraging the trend toward canned brews, Anheuser-Busch has launched Estrella Jalisco beer in the United States in a distinctive foil-top can. The packaging design uses a colorful foil circle sealed to the top of a pull-tab can to elevate and differentiate the Mexican brand, which is a light pilsner that's been brewed in the Mexican state of Jalisco since 1910.

Anheuser-Busch started importing Estrella Jalisco into the United States in bottles in Spring 2016 and launched the foil-top cans in the U.S. market in late July 2017. The new package will be available in 18 states by the end of 2017. The 24-oz can provides with the broadest canvas on which to present this innovation. However, the company is considering rolling out the foil on our 12-oz cans in the future[1 oz = 28.35 rp.; 24 oz = 680 rp.]. Estrella Jalisco is sold in retail, and also serves places of meetings, stadiums and other centers of events.



Foil-top cans brand is aimed at the Mexico heritage and, specifically, heritage of the Jalisco region, Mexican-American consumers are familiar with Estrella Jalisco organically. However, the consumers of Estrella Jalisco across the country reflect the diverse population of the United States.

Estrella Jalisco is a Mexican import and is sold in its original, in-language packaging. Estrella Jalisco's introduction of the first and only foil-top sealed canned beer in the U.S. is an innovation that raises the bar within the beer category and within the industry overall. Despite canned beer's past perception, consumers are now considering and adopting canned beer at quicker rates. Anheuser-Busch is capitalizing on that trend and differentiating Estrella Jalisco by adding an extra layer of protection that also adds a premium element to beer, which consumers have an excellent experience when consuming crafted brew. Putting the star on the foil is symbolic of commitment to delivering a superior-quality experience for consumers.

Genuine coconut in the natural packaging

Genuine Coconut Water, which uses nature’s «package» to protect the raw water inside, debuts in the U.S., with a suggested retail price of \$3.49 to \$3.99 per coconut. Consumers drink right from the original «container».

Sometimes you just can’t improve on the package Mother Nature designed. That was the conclusion Genuine Coconut Water came to for coconut water, popular these days for consumers looking for a crisp, natural and refreshing beverage. So it found a way to poke a hole in a coconut, plug it and sell it at retail.

Consumers drink the 100% certified organic and raw, non-processed coconut water directly from the fruit itself. Minimally packaged, the film-wrapped coconut sits in an open carton, which includes a straw. The patented easy-opening system is a ring made of recycled coconut husk fiber and natural resin. This allows the brand to tout that Genuine Coconut Water is a 100% organic certified, authentic, ecological and almost totally biodegradable drink because it uses only natural coconut resources.



The coconut’s natural protection ensures that the water it contains is free from any microbes for safety and to preserve the water’s flavor and aroma.

How is it opened and drank? You take off the film surrounding the coconut and literally pop open the tab like you would on a soda can. It is that easy. The final area is accessed by puncturing it with the attached straw. You can drink it either way. The straw is easier. You can easily cut a hole into the coconut if you want to drink it that way.

Every coconut is content a different product; it uses approximately 12 ounces as a basis. It sits in the round carton in the refrigerator in the produce section. It is shipped 15 coconuts per case. Once it is on the shelf, the shelf life is three weeks.

The coconuts are sourced in Thailand and then sent to Spain where our processing facility is located. Genuine Coconut Water is now introducing just in the United States but it is currently available in Europe and Canada.

Johnnie Walker smart bottle

Diageo is making waves in beverage packaging with a prototype of an electronically tagged bottle for Johnnie Walker Blue Label whisky that promises to not only enrich consumers’ experience of the top-shelf Scotch but also provide supply-chain tracking.

Created in partnership with Thinfilm, the bottle uses *near field communication* (NFC) technology, integrated with labeling, to let consumers interact with the package using NFC-enabled smartphones. A thin, flexible NFC tag is attached to each bottle, enabling consumers to simply tap their phone to the bottle’s back label to access product and brand information. The tags are made using Thinfilm’s OpenSense technology; they are applied to the bottles in such a way that the tag is torn if the bottle’s seal is broken.

A Diageo spokesperson describes the package as a «smart bottle», which uses Thinfilm’s electronic tags and links with a user’s smartphone to deliver instant consumer benefits direct to device, such as cocktail recipes, promotional offers and exclusive content



Each of the NFC tags is encoded at Thinfilm’s factory with an identifier that cannot be electrically modified or copied. In addition, members of the supply chain can use a smartphone or NFC reader to check the tag on any bottle and determine whether its seal has been broken, which would indicate tampering.

The tag’s ability to sense unsealed status promises added value for consumers. Consumers tapping their smartphone to the bottle at home, after breaking the seal, will be able to access more or different digital information than they received when tapping the sealed bottle at the store. The brand owner displayed a prototype of the smart packaging at Mobile World Congress in Barcelona in 2015.

The number of consumers equipped to interact with NFC-based smart packaging continues to grow. Research firm IHS Technology predicts that global shipments of smartphones with NFC capability will reach 1.2 billion units by 2018.

Silzni Nano formats driven by Millennials

The wine market is riding a wave of popularity and new packaging formats are lifted along with it. In terms of popularity, demand for wine packaging in the U.S. is forecast to reach \$2.9 billion in 2019, with an increase of 4.4% annually. Growth will benefit from steady, favorable gains in domestic wine consumption and production and increases in disposable personal income among Millennials (birth years from 1980s to 2000s). Another contributing factor is that, in the U.S., wine is becoming a common staple during meals at home rather than a beverage ordered out at restaurants or special events.

While glass is still the dominant packaging preference, it will continue to lose market share to a wide range of alternative package formats. In addition to bag-in-box packaging, other containers that are growing in popularity include plastic bottles, plastic cups and goblets, aseptic cartons, pouches and cans, due to performance features, product differentiation capability, and appeal to younger consumers, who are less attached to wine traditions than traditionalists and wine connoisseurs.



Wine containers are rapidly diversifying in terms of package formats and sizes. The fastest growth for containers will fall outside the typical 750-ml size, including both smaller- and larger-sized offerings. Single-serving wine packaging will see strong advances, driven by their advantage of enabling wine to be taken to or sold in places that typically don't allow glass containers. Also, single-serving containers enable wine to compete with beer in venues such as stadiums, theaters, concert halls and theme parks. Single-serving containers for wine include plastic bottles, aseptic cartons, cans, and cups and goblets, with cups and goblets are predicted to post the fastest gains, although from a small base.

One example of this new wave of wine packaging is Sileni Nano, New Zealand. Touted as the ideal partner to events, festivals and outdoor lifestyles, Sileni Nano's 100% recyclable, all-in-one wine bottle with a clip-on plastic cup is the first of its kind in the marketplace. The Nano wine is offered in five varieties and is packaged in 187ml PET bottle with screw-on cap.

WaterBox growing in packaging size

Value-priced WaterBox BIB packaging is expanding into the U.S. Leading Brands, Inc., Vancouver, Canada, has filed patent applications in both the United States and Canada to protect its new WaterBox that uses 85% less plastic than conventional bottled water. The company launched the WaterBox in Canada in September 2014 in 5- and 10-liter bag-in-box packaging under the brand Neurogenesis HappyWater, a formulation of naturally alkaline Canadian lithia water.

The WaterBox is completely recyclable and returnable to Extended Producer Responsibility (EPR) and «deposit/return» programs. It is available in major grocery retailers across Canada for \$7.99 for 5L and \$11.99 for 10L. We will shortly launch an even larger sized WaterBox to directly compete against home and office water delivery," says McRae, telling *Packaging Digest* that's looking to be a 15L size introduced in both HappyWater and a "more simple" spring water version. It is particularly targeted toward consumers interested in convenience and protecting the environment



The introduction presented several challenges, including developing a recyclable «cardboard box» that would survive in all environmental conditions. That includes making the WaterBox freezable to keep water cold over a weekend for camping, boating and other occasions.

As with any revolutionary new packaging, that's having consumers understand what they're seeing at first glance. That's done through the packaging, which feature bright yellow graphics. The design was done in-house with the intent to quickly convey the benefits of the packaging format from both a convenience and environmental perspective, he says. Side panel copy makes a visual case for the fact that the 5L size replaces 10 bottles of water. The water is dispensed through a pour spout on the side. The water is packaged for a two-year shelf life using a specific machine located in a joint-venture bottling facility.

Resource: www.foodmanufacture.co.uk,
www.packagingdigest.com

MARKET OF WINES

The market of wines is given on the basis of USA tendencies where are formed the main trends of the future in the market of wines after DrinkTEC-2017 moving France and Italy to the background.

Table wines

Investigation shows that the premium products win consumer's favor today especially in the wine market. The tendencies of premialization are visible definitely among consumers. The tendencies are broaden out-of-limits of beer, wines and spirits, but the premialization of the wine market fronts on the foreground. Consumers definitely move upwards at the prices; the segment of low-cost table wines is characterized by decrease shifted the preferences to more premium wines. The «SKU premium-plus» segment supports the premialization of wines most strongly and increases distribution. Following the demand of consumers, more and more retail dealers order the «SKU premium-plus» products that is a premium product in consumer house-keeper-packing.

Demographic tendencies are one of the factors promoting growth of premium wines. Generation «Y» and in a smaller measure generation «X» appear enthusiastic consumers of wines. The main difference is the inherent demand for the qualitative original goods on the reasonable price. In practice, it pours out in desire to buy the premium class wine in house-keeper-packing (tetra-pack or bag-in-box) as far as a packing reduces the high markup of manufacture on a product. The thrift supported with technological profitability allows young consumers to have deeper understanding of quality-price ratio.

Today, the link between demography and the premium shopping option is being monitored very closely.

Regardless of the color of the wine, table wines demonstrate a relentless shift towards premium $\geq \$9.50$ per liter. Wines valued at $\$9.50 \div 18.49$ per liter are more often distributed outside the trade chains. Wines with a price of $\$9.50 \div 13.49$ per liter prefers the generation «Y» whereas the generation «X» [baby boom] which has more riches makes more contributions to the wine with a value of $\$13.50 \div 18.49$ per liter.

Price points are indicated for the American wine market but they work well in the wine category of any country and are determined on the basis of income. Revenue growth thrive through to the premium segment. Revenue growth for 5 years allows steadily to sell premium wines.

Analysts believe that in the coming years the trend of premium wines will only grow. Producers continue to move more products to the premium sector.

However, the dominance of premium wines is not the just one winner in the market. Cabernet Sauvignon on the American market showed its growing influence. To a large extent, this is part of the consumer's taste, but certainly in the huge growth of distribution there is a considerable share of merit and sales promotion.

However, not all wine varieties showed good sales such as Cabernet Sauvignon (\$74 million). During the same period, Merlot sales fell by \$34 million, and a decrease of White Zinfandel by \$11 million. In these two vintage segments, there was a decrease in the number of UPC, a decrease in distribution, as well as sales incentives.

Sparkling wine

It should be noted the contribution to the growth of sales of sparkling wines, representing most of the U.S. wine market (+2.5% in USD and +1.0% in liters). Top 10 champagne/sparkling wines showed an increase of +7%, \$74 million for 52 weeks 2017. Positive indicators of sparkling wines are also a factor contributing to the growth of premium wines. Price points of traditional sparkling wines are similar to those seen in the segment of premium table wines.

As in the segment of premium table wines, sparkling wines are expected to increase consumer demand. Sales of sparkling wines continue to grow, serving more needs beyond holidays and special occasions.

The growth of the category of sparkling wines has been in recent years and for the fourth consecutive year is the fastest growing category within the wine industry. The growth of sparkling wine began with wine № 1 - Champagne, known in the United States as Prosecco, but wines such as Cava and Sekt also attracted the attention of consumers. The lower price of other sparkling wines allowed them to become everyday luxury in contrast to prohibitively expensive for many consumers champagne, especially during the severe economic recession that began in 2008. Over time, the recession has disappeared but consumers' interest in other sparkling wines persists along with the renewed growth of Champagne which shows a high growth starting with double digits in 2013 and up to 8% rise in 2016.

The wine market dominates on the West coast but other regions benefit from the opening of new wineries.

YOUR TESTS

ZAHA HADID



The project of reconstruction of the urban area Bako Masterplan, 94.000 m². Belgrade, Serbia.
The project focuses on the reconstruction of the city at the crossing of cultural sights in Belgrade.
The requirements refers to the complexity of the XXI century and the bounded area while preserving the surrounding landscape of cultural axis of Belgrade.



YOUR TESTS

DISPUTE ABOUT TESTS: WHAT FASHIONABLE TESTS WILL BE IN 2018

SEGMENTATION OF FOOD MARKET

Global food market is divided on three [3] segments:

- Retails;
- Fast food; and
- Restaurant business.

Each segment of the global market has leaders who define the market tendencies setting the fashion to regional directions of development.

Retails defines test tendencies for the products of house preparation. The recognized leader in a segment of retail is Great British. The «big four of supermarkets» with Tesco, Asda, Sainsbury's and Morrison's food chain operated by 70÷80% of full retail sales controls this market.

Fast food is under influence of the USA with support of such known brands as McDonald's, Starbucks, McCafé, Dunkin Donuts, PJ's Coffee, and etc. Segment of Fast food presents a small restaurant, café, snack-bars, and etc.

Restaurant business presents premium class of foodstuffs. The European leaders hold leadership on this segment, and it is mainly the leading restaurant of France and Italy. However the American restaurant business is recently on there heels «pulling out» the full categories from time-to-time.

Each segment is in the latest fashion power either Chinese, Japanese, Indian or other kitchens), and is supported by innovations, and is under strong influence of economic and political processes in the world.

Anybody does not have doubts that economic upturns and crises operate a food basket. Current year can be an example of political influence on tastes: the market of retails of Great Britain is under the influence of Brexit.

Well-known the fact when ruSSia in 2014 has refused from deliveries of the Polish apples; to smooth over a situation the American business has sold considerable volumes of the Polish apples, and has started an advertising support for a new direction as sparkling wines (the main product of a category is Cider).

As consequence of this tendency it is possible now to find wide assortment of sparkling wines on stall-board of the Ukrainian retails though it was earlier not similar excepting champagne.

What are tendencies visible today on the global markets to enter tomorrow in Ukraine [in a way of the foodstuffs and drinks]?

RETAIL

The tendencies of retail trade in Great Britain operate global resources. The various analytical companies regularly make forecasts of expected trends for the current year or quarterly. One of recognized leaders is company Eurostar which predicts 10 trends for 2018 in the report. Jointing for its opinion it will show some trends which it can see on the Ukrainian market in the future according to Agro Insightex.

Brexit to drive a global sourcing

Brexit will focus food manufacturers' attention on global sourcing in 2018, as uncertainties still continue to surround the UK's exit from the EU.

The unpredictable nature of the UK's exit from the EU will drive producers to look worldwide to source raw materials and workers and vegan food sales will outperform organic.

Less known citrus

In preparation for a hard Brexit, many firms and are seeking supply chains with commonwealth countries. As a result, oranges would come from South Africa instead of Seville. It also predicted the rise of lesser known citrus fruits, such as Kumquats [Kumquats = Lemon + Mandarin + Orange] and Calamondins [Calamondins = Kumquats + Mandarin].

Calamondins



Manufacturers would start looking to India, Australia, New Zealand and Canada for their raw materials and imported goods that might become too costly to import from the EU after Brexit.

It is quite probable that the changeable fashion in the near future can reduce demand for «less known citrus». Overproduction originated from the «shaken» manufacturing of these citrus will look for the new commodity markets, and than it can be ended with an input of these products on the Ukrainian market.

Organic market

The UK organic market is now worth more than ever at £2.2bn, growing by 6% in 2017 and driven in part by the rise in online shopping. The Soil Association's *2018 Organic Market Report* said this indicated six years of steady growth, with organic now accounting for 1.5% of the total UK foods.

In 2017, sales of organic products in independent retail grew by 9.7% and in home delivery by 9.5%, with almost 30% of all organic sales now taking place online or on the high street. Supermarket sales of organic goods also continued to increase, rising by 4.2% this year, while non-organic sales rose by just over 2%. Organic products also had the highest value growth, equating to over £20M in sales. Organic chilled foods grew by 21% and accounted for 3.4% of the total UK organic market. Dairy sales also increased by around 3%, and retained the highest share of the organic food and drink market, at nearly 29%. The report also revealed that organic wine continued to grow in popularity, with sales of beers, wines and spirits increasing by over 8%.

One of the biggest stories for organic over the past couple of years has been the rise of online shopping, and it's a trend that shows no sign of slowing down. Driven by convenience, an ever broader range of choice, and by younger generations entering the market, it's no surprise online sales are outperforming the traditional supermarket on organic. Home deliveries already account for almost 13% of the organic market and the expectation is that this could reach as much as 25% in the future. It's a good fit for organic too: the local, fresh, farm-to-door approach of box schemes is in line with the ethos of organic and appeals to consumers who value food provenance.

The problem of not-organic products in Ukraine is less actual though new and more filled shop-windows with inorganic products is more frequent shown up in supermarkets. Agro Insightex predicts that this tendency will become stronger in the Ukrainian retail in 2018 but the temp will be more less than in the European countries.

It is less actual for three reasons. On the one hand, Ukraine is positioned on the world markets as the country with manufacture of organic products, and principles operate frequently the approach. On the other hand, the most of the Ukrainian farmers has no means for purchase of chemicals and are not capable to make not-organic. Thirdly, if the shop-windows fill with inorganic products the Ukrainian consumers which have got used to natural and fell not-organic chemistry switch over to purchases of products from local markets. Ukraine is the agrarian country and has enough offers of organic food.

Vegan is to outpace organic

Vegan products



The name of «vegan products» sounds for the Ukrainian a little unusually. It is clear that it concerns vegetarianism, but everyone will answer far not what is differed «veganism» from «vegetarianism». There are various forms of vegetarianism: someone does not eat some egg but drinks milk [lacto-vegetarian], and others does not drink milk contrary but use of eggs in its diets [ovo-vegetarian]. Japanese vegetarian food doesn't exclude a chicken, i.e. chicken meat is a vegetarian dish.

Veganism is a radical vegetarianism. It is not only strict vegetarianism but also philosophy. Veganism excludes all products received as a result of operation with an animals. Vegans deny honey because it take away from bees, and circus, zoos and bullfight, cosmetics which has been tested on animals etc. Vegan diet will be contained no gelatin, mushrooms, and sugar.

It is considered to be that vegan food is destiny of celebrities but number of adherents of vegan food grows. The part of consumers considers transition on vegan food as a way of growing thin or for struggle against illnesses.

According to Eurostar, the popularity of vegan products would outpace organic products in 2018. It is predicted that vegan protein will continue to feature strongly and will perform at a higher level than organic during 2018. The rise in the number of vegan products consumed by the British public has been driven by brands such as Pret-A-Manger. Foodie [gourmet] brands will continue to include vegan as a pillar in new product development.

The number of vegetarians also grows in Ukraine. Statistics are not present but to trace growth it is possible by number of cafes offering a vegetarian diet, and number of websites, and creation of clubs as Kyiv Vegan Boom. The map of café of vegetarian kitchen across all Ukraine is developed . However it is not necessary to expect high percent of growth of vegetarian products in the country, where a national symbol is lard.

We'll go loopy for lupine

Lupine beans



One of ten [10] brands who will have development in 2018 Eurostar named Lupine beans [in English lupine is wolf, i.e. wolf a berry] which will be popular among the consumers searching for more healthy diets.

Cultivation of lupine is known since the Egyptian Pharaohs. A popular plant at Romans was extended on all empire. This plant is met often in Spain, Portugal and Greece. An And variety was cultivated by inhabitants of Peru. It was the meal extended at the time of Inca. The aboriginal people of the North America Javalay used a plant too.

Lupine is the kind of haricot, and is extremely bitter on taste, and contains high levels of alcaloids. Beans become edible after several days of soaking in the added some salt water only. Recently grown a kind of lupine is narrow-leaved lupine without bitter taste and not demanding soaking. It is grown up in Australia, Germany and Poland. Lupine beans have a full spectrum of essential amino acids, and does not contain starch that is unusual to an edible bean. Unlike from soy bean it is possible to grow up lupine in more temperate climates.

Lupine beans traditionally eat in a marinated kind [in a brine or in jars, as olives] in the countries of the Mediterranean and Latin America. The Portuguese «thermococo» has popular in pubs, and as snack. Beans can be crushed for an additive to wheat flour to improve taste and to receive cream color. Beans use for preparation of vegan sausages. Lupine votes even more often alternative of a soy beans.

The product is known as means of fall of a blood pressure and improves sensitivity of insulin. Lupine promotes management of appetite that does by its part of a healthy food.

Eurostar identified lupine beans as a key trend that manufacturers would want to capitalize on in 2018.

Anyone for turmeric?

Turmeric



Turmeric will become a key ingredient in 2018 as consumers turn to the spice for its medicinal properties and a source of antioxidants. You've probably got a jar of powdered turmeric in the back of a cupboard in your kitchen but do not give it any more thought than that. 2018 is going to be the year that turmeric comes to the forefront of your flavor palate. We're going to see turmeric come center stage as a named and lead ingredient.

Green and purple pizza

Purple Pizza



Eurostar forecast a rise in pizzas made with healthier ingredients, as consumers become more health conscious. Pizza bases made from vegetable flours will grow and feature strongly, tying in with the gluten-free trend that will continue to grow using natural ingredients. These alternative flours are made from beetroot and spinach creating a stand-out purple or green pizza base which tastes delicious and will satisfy the most discerning healthy eater and hungry kids alike.

The pizza for a breakfast underlines its potential and offers correct levels of a food during a breakfast. The concept «the pizza for a breakfast» is already popular around Rome. The ideal small pizza moves in the small portions and enough firm that is an ideal basis for its crowing of cold stuffing from meat or a ham, crude vegetables and fresh fruit.

Significant increase in Asian fusion cuisine at home

Vietnamese Pho



This year will see a significant rise in consumers cooking Asian fusion cuisine at home, according to Eurostar. The combination of great flavor, consumers looking for healthier dinner options and the ready availability of core Asian ingredients on the high street will bring these more exotic dishes into people's homes. Expect to see people making their own sushi with *pho* (Vietnamese) noodles entering everyday lexicon. These dishes are quick to cook and incredibly tasty and satisfying. The new china town development in Sheffield is just one example of these ingredients being readily available to a mainstream market.

Brown rice to be hot choice

Brown rice



The health benefits of brown rice have made the grain one of Eurostar's key food trends for 2018. UK consumers are turning to brown rice as a healthy carbohydrate to serve with a number of meals as part of healthier diets. Brown rice is growing rapidly at the moment. Only a few years ago you'd have to go to a specialist shop to find brown rice. Watch it start appearing on restaurant menus, in your sushi rolls and many more options on the supermarket shelf.

TRENDS-2018 in FAST-FOOD

Edible flowers, fruit marmalade and dinner rethinking are defined as the three leading food trends-2018.

Edible flowers

Flower buds will be transferred from the garden into the dinner plate. Cupid's-delight [*Viola tricolor*] is the most famous edible flowers often used in desserts and easy to crystallize for food designs. Lavender will definitely grow in popularity and will benefit. With its recognizable smell and fragrant aroma it is and will be used as a shade for a variety of food and beverages.

Flowers are the perfect decoration for photos with food which is very important for Instagram generation and brings powerful flavors to dishes. Attractive and colorful flower petals and buds including lavender, rose and violets perfectly complement cakes, biscuits and pastries as well as jams, jellies and colorful salads.

Fruit marmalade

In 2018 fruit marmalade will be more of a household name as the most traders will start to buy it for storage in the back. The well-known *Red Data* marmalade contains many vitamins, minerals and phytonutrients, and 18 of the 24 amino acids needed to form 50,000 proteins in the human body.

Retailers have plans to in the future fruit marmalade will become a home product and ingredient in various drinks and juices. Its unique properties and charm can have a very strong view in the main markets this year.

Add a little of the fourth dish

Waitrose Food & Drink predicts that in 2018 dinner will be transformed by adding the majority of consumers to the evening refectory of the small fourth meal. Due to the high employment lifestyle, people have adapted to the additional meal in the form of snacks after exercise in the fitness room or small snacks at work.

The fourth meal can lead to the emergence of packaged products with a marketing strategy aimed at «the perfect fourth meal». *Waitrose* believes that as a fourth meal Indian street food will become increasingly popular and will lead to the creation of combinations of a number of hybrid products such as marine escalope in marinated ginger or dried lamb *keema tacos*.

Resource:

<https://www.foodmanufacture.co.uk/Article/2018/01/03/Top-food-trends-for-2018>

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