

FOOD AND NUTRITIONAL

Supply Chain Outlook 2022

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*the***WrightGroup**[™]

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ECONOMY

- 3Q U.S. GDP ROSE 2.6%
- U.S. TENSIONS WITH CHINA

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Pricing Trends Key

- Price Increase 
- Price Increase Due to Current Events 
- Price Stable 
- Price Decrease 

Economic Update

The U.S. economy had a relatively strong month in October, with 3Q GDP rising 2.6% following slightly negative quarters in Q1 & 2. Inflation, as measured by the CPI, slowed to 7.7%, the third monthly decline in a row, and unemployment rose slightly to 3.7%, still near a 50-year low. 216,000 jobs were added in October. It may be evidence that the Fed's tightening strategy is starting to have an effect on the economy. The Fed has raised rates 75 basis points in four consecutive meetings to a target range of 3.75-4.00%. It also signaled that the next increase in December could be a slower pace of 50 basis points, but that their goal in 2023 could exceed the 4.6% top previously indicated.

Grocery prices increased 13% year-on-year in September and gasoline prices remained high due to turbulence in the crude oil market, where prices rebounded to near \$90/bbl in the wake of OPEC+ production cuts and proposed new sanctions on Russian oil due to be implemented by the Western alliance by December 5. U.S. Manufacturing PMI dipped to 50.4 in October which still signals growth. (China and the eurozone numbers were 48.7 and 47.1 respectively.)

Michigan's Consumer Confidence Index fell to 102.5 in October from 107.8 in September, but consumers continue to spend down savings and dip into credit cards to facilitate spending. U.S. households now hold \$1.7 Tr in savings down from \$2.3 Tr in late 2021. Revolving credit balances rose 8.7% annual basis in September to \$1.16 Tr, an all-time high. The rate on 30-year fixed mortgages hit 7.08%, a 20-year high. The financial markets, which have been devastated this year, finally saw some signs of hope in October, but remain under water for 2022.

- S&P 500: -16.97%
- DJIA: -7.71%
- NASDAQ: -28.44%

Europe

Russia has completely shut down the Nordstream 1 natural gas pipeline in order to pressure European leaders to eliminate Ukraine-related sanctions. As we have reported in past issues BASF, a major vitamin and intermediates producer based in Ludwigshafen, Germany is the largest consumer of Russian natural gas in Germany, accounting for 4% of total imports. There is a pipeline running directly from Russia into the plant. It is used to fuel the complex (60%) as well as providing feedstocks for their chemicals manufacturing (40%). It is thought that if the Russian gas is shut off or if pressure in the pipe drops below 50% of capacity, the plant may not be able to fully operate. This is a very real threat to the vitamin supply chain. We will continue to monitor this very closely.

China

The economic outlook for the world's second largest economy (China) has continued to weaken lately with Chinese Manufacturing PMI to 48.7 in October, signaling contraction in the sector aided primarily by the contraction of energy-intensive industries including petroleum, coal and ferrous metals. Severe heat waves and rising electricity use have further pressured industry. Most analysts currently expect China to miss its 5.5% GDP growth target for 2022 with newer estimates revising that target to

as low as 3.0%. Its most recent data release showed 3.9% growth in Q3, but many analysts question the accuracy of this number.

Aside from current economic data, there is growing geopolitical tension growing between the U.S and China on many levels such as Taiwan independence, freedom of navigation in the South China Sea, human rights abuses, tacit support of Russian behavior in Ukraine and many other issues. Keeping in mind that China is by far the major manufacturer of vitamins and many other nutrients, this is the longest term issue we as an industry face. We hope that cooler heads will prevail. Xi Jinping recently installed himself for a third term as President and will really be the only voice that matters in China for the foreseeable future. There is no heir apparent, and the emphasis in his thinking has shifted from economic well-being for his people toward a purely political focus on party loyalty.

REAL THREATS TO THE VITAMIN SUPPLY CHAIN ARE HAPPENING

CURRENT EVENTS

- UKRAINE - RUSSIA TENSIONS INCREASE
- CHINESE LOCKDOWNS

Coronavirus

- **Coronavirus: Worldview: October 15, 2022 Statistics** (Worldometer): Total Cases – 631 MM (upward trend), Total Deaths – 6.6 MM (downward trend).
- The number of new Covid-19 cases is rising once again. While the virus isn't killing nearly as many people as it used to, thanks to vaccinations, it is still causing havoc around the world.
- Recently, the Centers for Disease Control and Prevention signed off on updated versions of Pfizer-BioNTech's and Moderna's Covid boosters, allowing vaccinations to begin. Officials say the new boosters could be key to slowing the fall surge of the BA.5 subvariant, currently the dominant strain in the U.S.

Chinese Lockdowns: COVID-19 Pandemic Lingers

- Businesses in China's richest and biggest consumer market are still struggling with a sluggish recovery as lingering restrictions continue to deter people from going about their normal lives even three months after Shanghai lifted an unprecedented Covid lockdown that lasted more than 60 days. Periodic lockdowns continue to occur as cases emerge.
- Some indicators show Shanghai is taking longer to recover than Hong Kong and Singapore even though strict social distancing rules were also in place and after rules were eased in these cities.
- The demand for everything from dining out to movies and tourism are still far below pre-lockdown levels as Shanghai's 25 million residents are still under China's Covid-Zero policy. Recent Covid outbreaks in some of the top domestic travel destinations such as Hainan and Xinjiang further scare visitors from making travel plans. Summer holiday travel bookings to Shanghai, which has usually been the top destination for Chinese visitors during the holiday period, fell 70% this year.
- There are small signs that the total lockdown policy may moderate somewhat as citizens and businesses agitate for relief and as the economy continues to weaken. President Xi will have the final word.

Ukraine & Russia

- Ukrainian forces are making gains in the south, with the recent withdrawal of Russia's forces from the region of Kherson, a major blow to Putin as this was the first provincial capital taken in the February invasion. It follows on Ukrainian success in the Kharkiv region earlier this fall.
- Since the beginning of the invasion, this last week has seen the most ambitious ground assaults by the Ukrainians, following sustained attacks on command posts, ammunition stores, and fuel reserves far behind the front lines. It is estimated that Russia has suffered 100,000 killed, missing or wounded since the conflict was initiated by Russia. It is likely to be a very cold and dangerous winter season.

Trade

- The incredible strength of the U.S. Dollar has upended trade to a great extent. The dollar hit a 32-year high against the yen and is trading near parity with the euro. European Union GDP is growing at 2.1% year-on-year and inflation hit 10.7% in October. Their energy picture is more severe than in the U.S., although natural gas stockpiles are now at about 94%, with alternative suppliers of liquefied natural gas (LNG) making up for Russian cutbacks.
- The supply chain in general has been performing better as bottlenecks have eased at U.S. and Chinese ports due in part to slowing demand as companies work down inventories and hunker down for a possible recession in 2023. China's "zero-Covid" policy remains a problem and continues to contribute to supply chain fragility.
- Russia and Ukraine recently signed a new U.N. backed deal to resume exports of both Russian and Ukrainian grain through the Black Sea. Russia briefly withdrew from this deal after several of their Navy ships were damaged by marine drones but seems to have now resumed cooperation. The deal is not only significant for global food supplies as the region accounts for a significant percentage of global sunflower, wheat, barley, and maize (corn) exports but also marks the first major agreement between the two countries since the war began. Though all sides are proceeding with extreme caution, the first ship was scheduled to set sail on 8/1 and brings along with it new signs of optimism for the future of global food supplies.

Next Challenge: A "Tripledemic"

- **Covid-19 omicron** variants which are less severe so far, but very transmissible as compared to past strains. These new variants include BQ.1.1, XXB, BA.2.75, BA.2.75.2, BQ.1 and BQ.1.1. Despite new booster vaccines designed to thwart the omicron type variants, cases are growing as cold weather sets in, and vaccines are less than 100% effective.
- **RSV (respiratory syncytial virus)** which affects mostly young children with undeveloped immune systems but is being seen in compromised adults as well. Pediatric hospitalizations are at 90% capacity in several major population centers.
- **Influenza H3N2** is this year's seasonal flu strain. It is a fairly severe form of flu, based on experience seen in the Southern Hemisphere during the winter season there, but this year's vaccine seems to be very effective against it, at least so far. As largely unmasked citizens have started to travel and gather again as schools and businesses reopen, there is growing concern that the cautious stance of the past two years which probably prevented disease transmission in large part (especially flu), is now in the rear-view mirror for many.
- Depending on how this new disease burden plays out this winter, we could once again see strong growth returning to the immunity products category which was fairly flat this year following explosive growth in 2020-21.

FAT SOLUBLE

VITAMINS

Trending Vitamins:

- FOLIC ACID
- VITAMIN C
- CYANOCOBALAMIN
- VITAMIN D

Vitamin A: Prices for Vitamin A have stabilized despite tightened supply due to European producer supply constraints. Feed demand way down, which is starting to pressure pricing in China. Producers had scheduled extended maintenance shutdowns this summer, in part to tighten the market.



Vitamin D: Prices on Vitamin D have remained stable. Feed industry especially weak.



Vitamin E: Demand is stronger than supply across the market. Price is trending up due to energy and logistical issues stemming from the War in Ukraine. Signs of some weakening in China for the same reasons as with Vitamin A. Natural VE is extremely tight and expensive.



Vitamin K: Current pricing for vitamin K1 is stable. Most users prefer a 1% or 5% trituration. New uses in bone health and other condition-specific formulations, especially with vitamin K2, is making this formerly minor vitamin a more interesting story. Pricing and demand are stable.



An already stressed global food supply chain could see further disruption because of Russia invading Ukraine.

Pricing Trends Key

Price Increase

Price Increase Due to Current Events

Price Stable

Price Decrease



WATER SOLUBLE

VITAMINS CONT.

Trending Vitamins:

- FOLIC ACID
- VITAMIN C
- CYANOCOBALAMIN
- VITAMIN D

Vitamin C: Vitamin C prices are continuing to increase significantly due to tight supply and increased shipping costs. Supply is adequate and several new entrants may start to pressure pricing as we enter 2023.



Vitamin B1 (Thiamine):

The B1 market has stabilized at a low price. All manufacturers are producing and several new entrants coming.



Vitamin B2 (Riboflavin):

Riboflavin USP and food grade pricing are firm, and supplies are adequate. Several new entrants have begun manufacturing and potential capacity increases can be expected by the majors.



Vitamin B3 (Niacin/ Niacinamide):

Pricing has stabilized in recent months even as pyridines have tightened up. Longer term, oversupply is developing.



Vitamin B5 (Calcium

Pantothenate): After increases experienced in the beginning of the year, prices have stabilized

in the market at lower levels and are expected to continue to decrease in the coming months.



Vitamin B6 (Pyridoxine):

B6 pricing has been stable as supplies have improved and demand has decreased.



Vitamin B7 (Biotin):

After reaching exceptionally high prices in 2020, B7 prices began to fall and have now stabilized at a low level.



Vitamin B9 (Folic Acid):

The B9 market is displaying volatility; prices are currently on the rise due to raw material availability and logistics-related issues. Feed industry remains very weak.



Vitamin B12 (Cyanocobalamin)

The B12 market is stable but prices are expected to rise due to increased raw materials costs.



Pricing Trends Key

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Price Increase Due to Current Events

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MINERALS

- SOME MINERALS HAVE SEEN PRICE INCREASES
- PRODUCTION AND TRANSIT ISSUES ARE PART OF ESCALATION

Trending Minerals

- Iron
- Magnesium Sulfate
- Magnesium Oxide
- Magnesium Citrate
- Zinc Gluconate
- Zinc Citrate
- Zinc Oxide

Calcium Carbonate: Visit the Granulations section on page 10 for more information about our directly compressible version of SuperTab® oyster shell calcium carbonate.

- SuperTab® Oyster Shell Granulation (OSG) 2000 AM
- SuperTab® Oyster Shell Granulation 2100 Malto
- SuperTab® Oyster Shell Granulation 2300 Acacia

Pricing Trends Key

- Price Increase
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Copper: Prices have stabilized but demand remains high.



Iron: Iron prices have stabilized after volatility and increases were experienced at the beginning of the year. Supply and lead times have normalized since early 2022 as well.



Electrolytes

Calcium: Prices have started to stabilize after steady increases in the first half of the year.



Magnesium: Magnesium market price and supply are stable.



Potassium: Potassium prices and availability are stable.



Phosphorus: Global demand and pricing continue to increase.



Sodium: Sodium prices have stabilized as supply constraints have loosened due to improvements in logistical landscape.



Zinc

Zinc prices have stabilized however prices are expected to rise into the end of Q4 / early 2023.



Zinc Gluconate: The price of Zinc Gluconate is stable and lead times have normalized.



Zinc Oxide: Prices for Zinc Oxide have decreased off of summer highs and are beginning to stabilize.



Zinc Sulfate: Zinc Sulfate prices remain stable and lead times have normalized.



Zinc Ascorbate: Prices are increasing due to increased energy costs and tightened supply.



Zinc Citrate: Prices are on the rise with longer lead times continuing.



MINERALS CONT.

- SOME MINERALS HAVE SEEN PRICE INCREASES
- PRODUCTION AND TRANSIT ISSUES ARE PART OF ESCALATION

Chelates

Zinc Amino Acid Chelate: Prices and lead times for zinc amino acid are increasing.



Zinc Bisglycinate Chelate: Prices for zinc bisglycinate are increasing and lead times are longer than average.



Zinc Glycinate Chelate: Copper Glycinate prices are stable and expected to remain so.



Copper Glycinate Chelate: Copper Glycinate prices are stable and expected to remain so.



Manganese Amino Acid Chelate: Manganese Amino Acid shows an increase due to raw material availability and longer than average lead times.



Pricing Trends Key

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Trace Minerals

Chromium: Chromium prices remain stable but can be difficult to source due to long lead times.



Molybdenum: Lead time and prices remain stable.



Selenium: Lead time and prices remain stable.



PREMIXES

- MANUFACTURERS ARE SWITCHING TO PREMIXES
- PANDEMIC HAS CHANGED THE WAY PROVIDERS OFFER SERVICES



Custom Nutrient Premixes

More and more manufacturers are switching to vitamin and mineral premixes. Premixes consolidate multiple nutrients into a quality-assured, single-step ingredient and deliver economies of scale by simplifying ingredient procurement from a single source.



Wright Group SuperBlend®

Our value-added SuperBlend® custom nutrient premixes deliver performance and stability in high temperature and shear processes in a variety of food and beverage products, including:

- Extruded bars
- Gummy supplements
- Breakfast cereals
- Ready to drink beverages
- Beverage mixes



MICROENCAPSULATION

- AN EFFECTIVE METHOD OF MASKING UNWANTED FEATURES
- DELIVER A WIDE-RANGE OF FUNCTIONAL INGREDIENTS



Microencapsulation Technology

Vitamins, minerals, and other nutrients possess unique characteristics that can affect the appearance, color, and odor of the final product. Microencapsulation is an effective method of masking unwanted sensory characteristics while maximizing nutrient function.

SuperCoat[®], our most recent innovation using our proprietary SMART[™] process, envelops particles at the microscopic level in a protective shell. This value-added coating technology delivers superior performance and stability of essential nutrients for a wide range of multi-functional ingredients.

Trending Microencapsulated Nutrients:

- Vitamin C
- Vitamin B5 (Calcium Pantothenate)
- Vitamin B9 (Folic Acid)

With a diverse portfolio of products, The Wright Group is one of only a select group of manufacturers with the technology and resources to deliver independent manufacturing of custom premixes, microencapsulated nutrients, and granulations.

Our comprehensive supply chain and extensive list of pre-qualified ingredients allows us to react quickly to changing market trends and help you keep up with consumer demand. We also understand that superior service is just as important as technology and expertise. That's why we provide you with prompt quotations, technical assistance, and support documentation to help you efficiently deliver your products on time. Contact us today to talk to one of our experts about your project needs or ask about any ingredients not listed here.



GRANULATIONS

- DELIVER ESSENTIAL NUTRIENTS IN GRANULAR POWDERS IDEAL FOR HIGH SPEED TABLETING
- CAN BE INCORPORATED INTO DRUM-TO-HOPPER TABLET BLENDS



Granulations

Rather than outsource granulations from a third-party manufacturer, The Wright Group has committed to developing technologies and processes in-house to effectively and efficiently manufacture **SuperTab® direct compressible granulations**.

SuperTab® granulations deliver essential nutrients in uniform, free-flowing, granular powders ideal for high speed tableting processes. As usual The Wright Group™ combines quality, innovation and superior knowledge to make sure your product is the best it can be. Ask about our granulation capabilities today!

Trending Granulations:

- Glucosamine
- Chondroitin
- Vitamin C

Oyster Shell Granulation

SuperTab® Oyster Shell calcium carbonate is sourced from an above sea level deposit, characterized as fossilized oyster shell beds. These oyster shell beds have been thoroughly vetted over the past ten years with testing of the material both analytically and physically to insure consistency and purity. The Wright Group sources the high purity genuine shells exclusively from a domestic supplier.

Contact us today to get started on your next dietary supplement product containing calcium carbonate granulations. Insist on SuperTab® Oyster Shell authenticity in your formulation.



blending performance & stability

For over 100 years The Wright Group has utilized our extensive ingredient knowledge to consistently deliver quality- assured custom nutrient premixes, microencapsulations, and granulations.



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Call us: **(800) 201-3096**

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