

International Grain Market Threats & Opportunities

2023 Risk & Profit Conference

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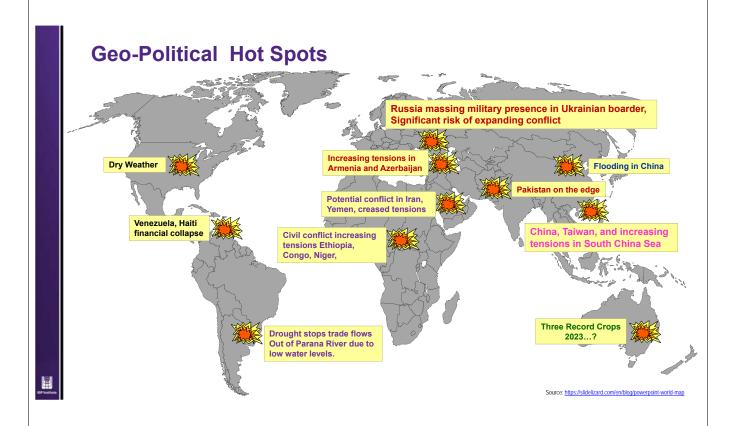


Current Market Outlook & Issues Outline for Today

- > GEO-POLITICAL ISSUES
- > MACRO ECONOMY
- > COARSE GRAINS & CORN
- > ENERGY & LIVESTOCK
- > IMPACT OF OILSEEDS
- > WHEAT MARKET TRENDS
- > OCEAN FREIGHT
- > WEATHER

MARCO ECONOMIC AND GEO-POLITICAL ISSUES

Today's primary drivers of commodity markets...



Geo-Political Risks

- China U.S. Relations and the "Thucydides Trap"
 Strategic diversification of country of origin supplies;
 Taiwan China: China and their Claim to the South China Sea;
 Import Tariffs and Restrictions: China, U.S., etc...
- Russia re-emergence as a major power (Central Asia, Eastern Europe, Middle East, and China)
 - Ukraine and collapse of Black Sea Grain Initiative
 - Unilateral trade agreements, China, Turkey, India, Middle East and African...
- > Increasing government concern on food security,
- Increasing government policies to restrict trade, protect markets, and domestic food prices and security; (Export Taxes and Restrictions: Argentina, Russia, India, etc...)

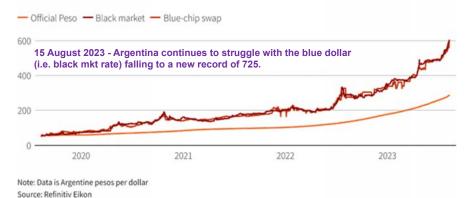
Current Market Overview, Outlook & Issues U.S. Dollar Index



Current Market Overview, Outlook & Issues **Argentina Peso**

Argentina: peso unpegged?

Argentina has seen parallel peso/dollar FX rates diverge sharply since a political upset in 2019. The long-embattled currency has hit 600 per dollar in the black market this month, over twice the official price, ahead of crunch primary elections.



Source: Barchart - https://www.barchart.com/futures/quotes/ZSH21/interactive-chart



Argentina's central bank raised the benchmark interest rate to 118% from 97% previously.

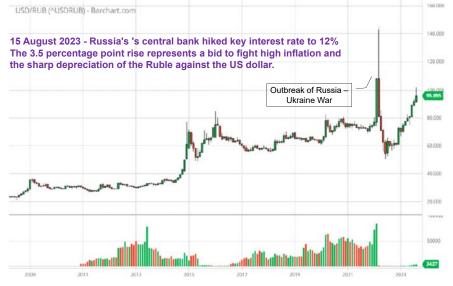
Currency devalued to 350 pesos / US Dollar

In the aftermath of a shock primary election, seen as a reliable bellwether for the upcoming presidential elections, propelled libertarian outsider Javier Milei, who wants to axe the central bank and dollarize the economy.

Latin America's third-biggest economy is battling a severe economic crisis with sky-high inflation and dwindling central bank reserves.

The official peso plunged nearly 18% on Monday morning to just over 350 pesos per dollar and the source said the exchange would be fixed at this rate until the October presidential vote.

Current Market Overview, Outlook & Issues Russian Ruble



Source: Barchart - https://www.barchart.com/forex/quotes/%5ERUBUSD/interactive-chart



Monthly Nearby

15 Year History

Ruble hits 16 month low.

Current Market Overview, Outlook & Issues Chinese Yuan



Monthly Nearby

15 Year History

- Chinese yuan is trading close to its 2023 lows.
- Currency has plunged 5% this year amid signs of Chinese economic weakness.
- Beijing is battling weakerthan-expected growth, deflation, and plunging exports.



Source: Barchart - https://www.barchart.com/futures/guotes/ZSH21/interactive-chart

Current Market Overview, Outlook & Issues U.S. Crude Oil WTI – Nearby Monthly

China in deflation

China's consumer prices fell into deflation in July for the first time since February 2021, while factory gate prices extended their declines, as the world's second-largest economy struggled to revive demand.



Source: Refinitiv Datastream | Reuters, August 9, 2023 | By Kripa Jayaram



 Beijing is battling weakerthan-expected growth, deflation, and plunging exports.

Beijing has set a consumer inflation target of around 3%, which would be up from 2% recorded in 2022,

authorities are downplaying concerns about deflation.

The consumer price index (CPI) dropped -0.3% year-on-year in July, said National Bureau of Statistics (NBS), compared with the median estimate for a 0.4% decrease in a Reuters poll. It was the first decline since February 2021.

Geo-Political Risks - Debt Crunch or Default

Below is a look at countries that face a debt crunch or have already defaulted on international loans:

- UKRAINE
- EGYPT
- PAKISTAN*
- SRI LANKA*
- LEBANON

- EL SALVADOR
- TUNISIA
- GHANA
- MALAWI
- ZAMBIA

Risks to U.S. Economy

Economic risks and significant headwinds for the U.S. economy:

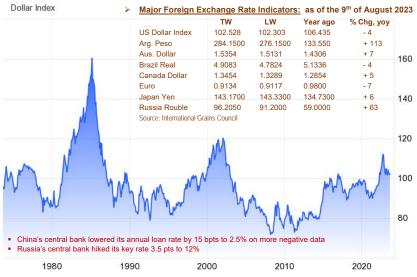
- > Continued tightening of US Monetary Policy, i.e.
 - Higher Interest Rates.
 - Strong U.S. Dollar, particularly against importers of U.S. Commodities
- > Slow economic growth in Europe and China,
- > Higher Energy Prices, driven by current administration policies and regulatory approach,
- > Increasing environmental regulations,
- > Persistent U.S. domestic tensions are not likely to wane,
- Move away from a globalized economy to regionalized relationships,
- ❖ U.S. global hegemony under attack, as well as U.S. Dollar status as world's reserve currency.

All are having a significant impact on commodity prices...

Macro Financial Issues Arising

The Value of a Dollar...

Current Market Outlook & Issues U.S. Dollar Index



source: tradingeconomics.com

Source: U.S. Bureau of Labor Statistics, Trading View Aug23 - https://tradingeconomics.com/united-states/currency

50 Year Chart

The dollar index appreciated to 102.95 on the 14th of August, hovering near its highest levels in more than five weeks as traders increasingly bet interest rates will need to stay higher for longer and as the US economy remains much stronger than its neers

The latest data showed retail sales rose more than expected in July, pointing to strong consumer spending despite high prices and borrowing costs.

Earlier, producer prices accelerated beyond expectations and consumer inflation remains well above the target.

Investors now look ahead to the Fed policy

Investors now look ahead to the Fed police meeting minutes on Wednesday.

The ISM manufacturing PMI for the US pointed to a ninth-straight month of contraction in the factory sector while job openings went down to over two-year low.

At the same time, disappointing manufacturing PMIs for China and Europe boosted the greenback safe-haven appeal

Forecast: Traders are assigning a nearly 81% chance the Fed will leave rates steady in September. Odds for a quarter point increase in November stand at 31%.

The US Dollar is expected to trade at 104.25 by the end of this quarter, according to global macro models and analysts expectations.

Looking forward, we estimate it to trade at 107.59 in 12 months time.

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Fundamental Issue Impacting Commodities

Prices

- · Historically high "Flat" price volatility,
- · Historically high "Basis" price volatility,
- · Strong U.S. Dollar, particularly against currencies of importers of U.S. commodities.

Supply & Demand Issues

- Wheat tight Ending Stocks situation, can no longer afford to be priced as a feed grain
- Corn & Feed Grains at historically tight Ending Stocks situation
- Soybean & Oilseeds at historically tight Ending Stocks situation
- · Increasing volatility and costs of fossil fuels; crude oil, coal, natural gas, nitrogen fertilizers
- · Tightening supplies and higher prices for phosphate and potassium fertilizers

Weather

- · Changing regional weather impacts;
- · Dry weather in the U.S.,
- · Flooding in China,
- Dry in Argentina and Paraguay as Parana River is at lowest level in 77 years, frustrating exports from Argentina, southern Brazil and Paraguay;
- · Shift form La Nina to El Nino...?

COARSE GRAINS AND CORN

Corn, Grain Sorghum Outlook...

Corn - World

Corn World as of July 2023									
Attribute	23/24 Jul'23	Change	23/24 Jun'23	22/23	21/22	20/21	19/20		
Area Harvested (1000 HA)	204,742	+999(+.49%)	203,743	200,996	207,287	198,946	194,350		
Beginning Stocks (1000 MT)	296,297	-1255(42%)	297,552	309,877	293,069	307,488	322,766		
Production (1000 MT)	1,224,465	+1697(+.14%)	1,222,768	1,150,684	1,218,704	1,128,943	1,123,118		
MY Imports (1000 MT)	188,403	+1400(+.75%)	187,003	175,054	184,483	184,862	167,689		
TY Imports (1000 MT)	188,588	+1500(+.8%)	187,088	174,923	186,645	179,870	169,751		
TY Imp. from U.S. (1000 MT)	0	-	0	0	62,860	68,323	47,067		
Total Supply (1000 MT)	1,709,165	+1842(+.11%)	1,707,323	1,635,615	1,696,256	1,621,293	1,613,573		
MY Exports (1000 MT)	198,259	+500(+.25%)	197,759	176,569	206,457	182,703	172,386		
TY Exports (1000 MT)	194,867	+1500(+.78%)	193,367	178,256	193,494	184,072	175,871		
Feed and Residual (1000 MT)	762,087	+1300(+.17%)	760,787	732,428	745,929	723,990	716,893		
FSI Consumption (1000 MT)	434,702	-100(02%)	434,802	430,321	433,993	421,531	416,806		
Total Consumption (1000 MT)	1,196,789	+1200(+.1%)	1,195,589	1,162,749	1,179,922	1,145,521	1,133,699		
Ending Stocks (1000 MT)	314,117	+142(+.05%)	313,975	296,297	309,877	293,069	307,488		
Total Distribution (1000 MT)	1,709,165	+1842(+.11%)	1,707,323	1,635,615	1,696,256	1,621,293	1,613,573		
Yield (MT/HA)	5.98	(33%)	6	5.72	5.88	5.67	5.78		

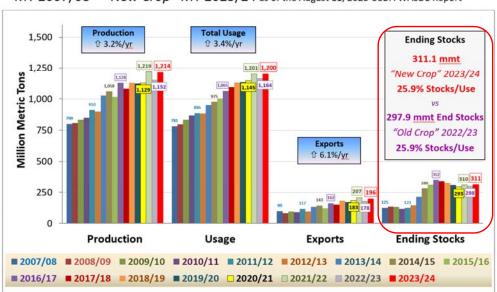
- Record Production 1,225 mmts, Record Consumption 1,196 mmts
- Ending Stocks 314 mmts, up 17.8 mmts YoY, Stx/Use 26% / 25% LY, modest increase on waning demand
- Grain Sorghum will continue to be exported to China at a premium to corn...

 $Source: USDA\ FAS\ PS\&D\ -\ \underline{https://apps.fas.usda.gov/psdonline/app/index.html\#/app/compositeViz}$

Current Market Outlook & Issues

World Corn Supply-Demand

MY 2007/08 - "New Crop" MY 2023/24 as of the August 11, 2023 USDA WASDE Report

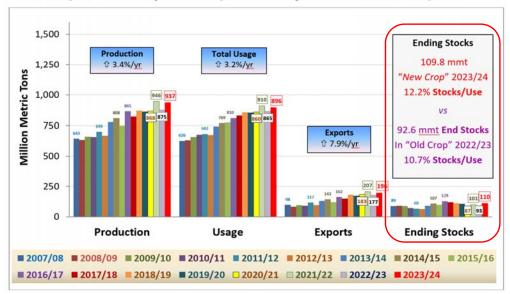


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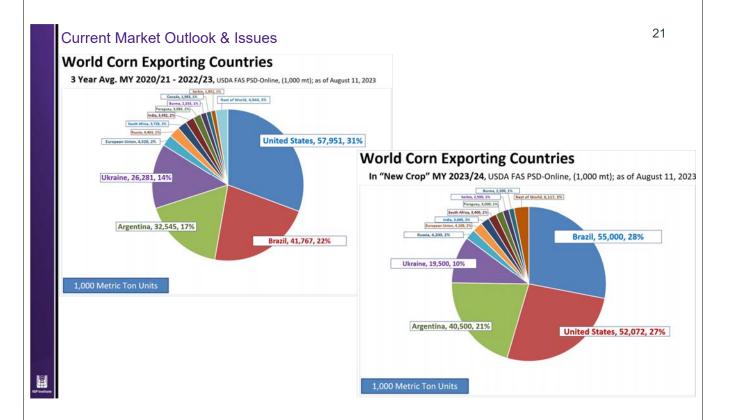
"World Less-China" Corn Supply-Demand

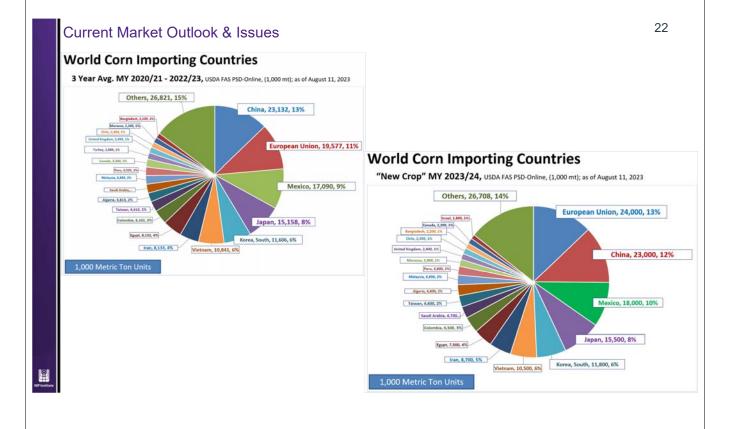
MY 2007/08 - "New Crop" MY 2023/24 as of the August 11, 2023 USDA WASDE Report

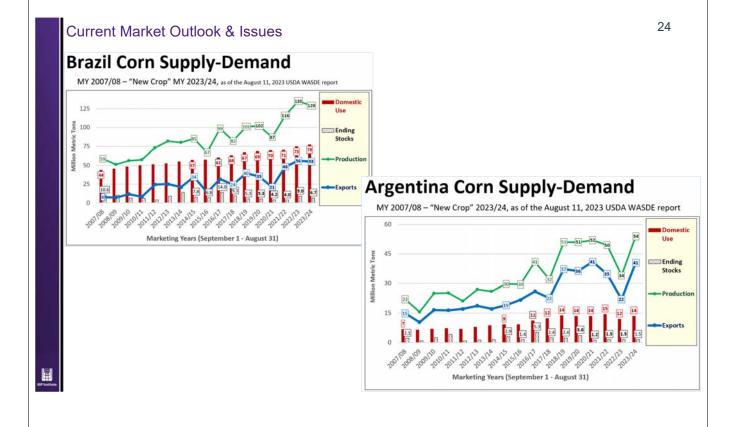




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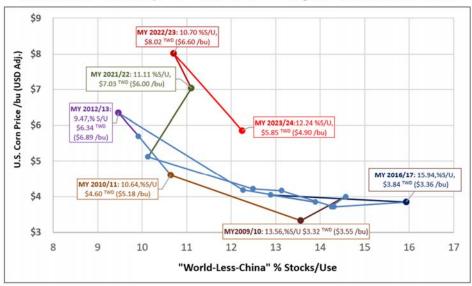


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Current Market Outlook & Issues

U.S. Corn \$USD\$ Adj. vs World Less-China % S/U

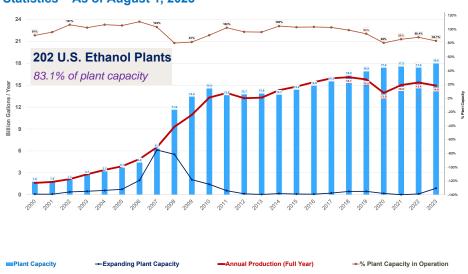
MY 2007/08 - "New Crop" MY 2023/24 as of the August 11, 2023 USDA WASDE



Current Market Overview, Outlook & Issues

U.S. Ethanol Capacity & Production

Statistics - As of August 1, 2023

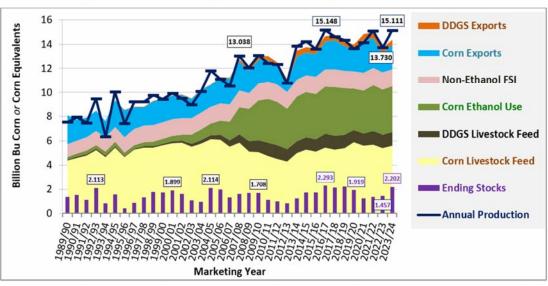


Source: USDA FRS

Current Market Overview, Outlook & Issues

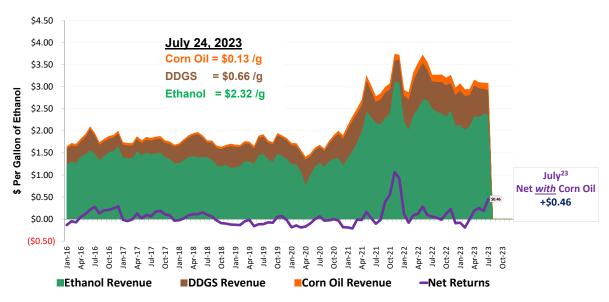
U.S. Corn & DDGS Supply - Demand

As of the August 11, 2023 USDA Reports + KSU "New Crop" MY 2023/24 estimates



Source: USDA ERS & KSU

Current Market Overview, Outlook & Issues Ethanol Revenues & Net Returns

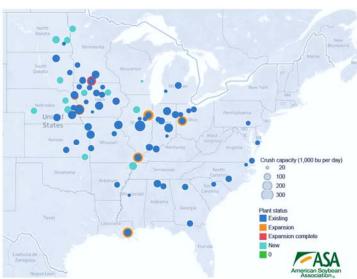


Source: ISU Ethanol Plant Model (January 2007 - July 24, 2023)

OILSEEDS

Soybean Outlook...

Current Market Overview, Outlook & Issues U.S. Crushing Capacity



Soybean crushing capacity is expected to expand to meet growth in renewable diesel demand.

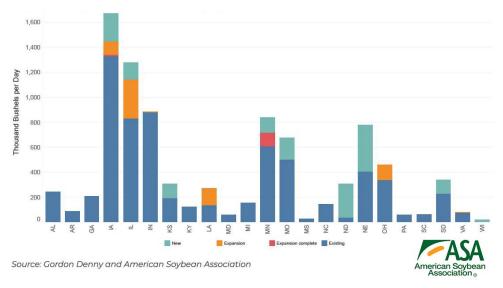
The announced 23 new or expanded crush plants would increase crush capacity by 34%.

Of the 2.33 mbus/day of increased nameplate capacity, 120,000 has been built.

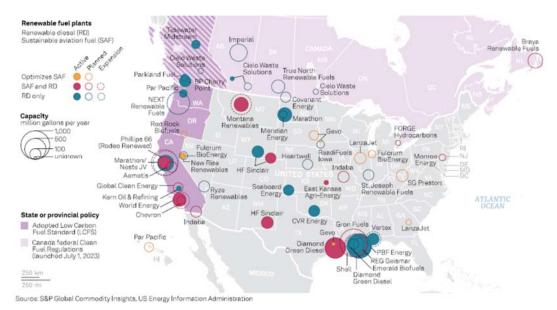
2023 to 2025 calendar years, estimate 430,000 to 530,000 bus/day of capacity planned. Up to 800,000 bus/day in 2026.

A number of these longer timeframe announcements are dependent on market and other factors for completion.

Current Market Overview, Outlook & Issues U.S. Crushing Capacity by State



Current Market Overview, Outlook & Issues U.S. & Canada Renewable Fuel Plants



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Current Market Overview, Outlook & Issues U.S. & Canada Renewable Sources - Soybeans



· World Soybeans

- Estimated seed production 405.3 mmts harvest in 23/22
- Estimated crush capacity at 330.3 mmts, with oil production 62.1 mmts / meal 259.2 mmts in 22/23
- Industrial and fuel consumption of 13.7 mmts,

· U.S. Soybeans

- Estimated seed production 117.0 mmts harvest in 22/23
- Estimated crush capacity at 62.6 mmts, with oil production 12.3 mmts / meal 49.1 in 22/23
- Industrial and fuel consumption of 5.6 mmts

Brazil Soybeans

- Estimated seed production 163 mmts harvest in 22/23,
- Estimated crush capacity at 55.8 mmts, with oil production 10.7 mmts / meal 43.2 mmts in 22/23
- Industrial and fuel consumption of 4.5 mmts,

· Argentina Soybeans

- Estimated seed production 48.0 mmts harvest in 22/23
- Estimated crush capacity at 36.3 mmts, with oil production 7.2 mmts / meal 28.3 mmts in 22/23
- Industrial and fuel consumption of 2.1 mmts,

Current Market Overview, Outlook & Issues U.S. & Canada Renewable Sources - Canola



· World Canola / Rapeseed

- Estimated seed production 88.3 mmts harvest in 22/23
- Estimated crush capacity at 81.1 mmts, with oil production 32.9 mmts / meal 47.3 mmts in 22/23
- Industrial and fuel consumption of 9.00 mmts,

· Canadian Canola

- Estimated seed production 19.0 mmts harvest in 22/23, with projected 26 mmts harvest by 2025
- Estimated crush capacity at 10.0 mmts, with oil production 4.2 mmts / meal 5.9 mmts in 22/23
- Industrial and fuel consumption of 0.34 mmts,
- 14 crush plants with 11.1 mmts, with announced 5.7 mmts more capacity by 2025, with a projected 15 mmts crush

· U.S. Canola / Rapeseed

- Estimated seed production 1.7 mmts harvest in 22/23
- Estimated crush capacity at 1.9 mmts, with oil production 0.81 mmts / meal 1.16 in 22/23
- Industrial and fuel consumption of 1.13 mmts (imports from Canada),
- Canola Council of Canada estimates 6.5 mmts of canola consumed for feedstock in US by 2030, yielding 2.86 mmts of oil (6.31 billion lbs)

Current Market Overview, Outlook & Issues U.S. & Canada Renewable Sources - Novel

- · Camelina (Global Clean Energy)
 - Enough seed for 220k acres in 2022, aiming for more than 1 million acres across US High Plains
 - Camelina R&D gallons from 2022
 - ExxonMobil 5-year commitment for 220 million

Carinata Brassica (Nuseed)

- Commercially grown in Argentina, shipped to EU for feedstock;
- targeting acres in US Southeast,
- BP 10-year agreement with BP

· Penny-Cress / CoverCress

- 8-10k acres in Illinois/Missouri in 2022,
- aiming for 100k acres in 2025, 3 million acres by 2030
- Bunge to crush product, Chevron to purchase oil feedstock







Current Market Outlook & Issues

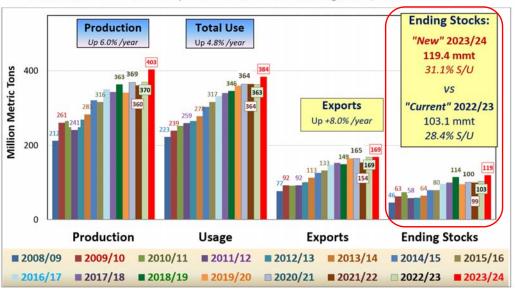
Soybeans - World

Oilseed, Soybeau World as of July 2023									
Attribute	23/24 Jul'23	Change	23/24 Jun'23	22/23	21/22	20/21	19/20		
Area Harvested (1000 HA)	138,328	-1495(-1.07%)	139,823	136,029	131,130	129,390	123,217		
Beginning Stocks (1000 MT)	102,897	+1577(+1.56%)	101,320	99,142	100,148	95,000	114,116		
Production (1000 MT)	405.310	-5390(-1.31%)	410,700	369,717	360,118	368,816	341,100		
MY Imports (1000 MT)	166,574	-3250(-1.91%)	169,824	165,810	156,603	165,495	165,294		
Total Supply (1000 MT)	674,781	-7063(-1.04%)	681,844	634,669	616,869	629,311	620,510		
MY Exports (1000 MT)	169,290	-3122(-1.81%)	172,412	168,929	153,883	164,883	165,582		
Crush (1000 MT)	330,251	-1662(5%)	331,913	311,199	314,353	315,986	312,591		
Food Use Dom. Cons. (1000 MT)	24,388	+5(+.02%)	24,383	23,124	21,994	21,499	20,961		
Feed Waste Dom. Cons. (1000 MT)	29,870	+76(+.26%)	29,794	28,520	27,497	26,795	26,376		
Total Dom. Cons. (1000 MT)	384,509	-1581(41%)	386,090	362,843	363,844	364,280	359,928		
Ending Stocks (1000 MT)	120,982	-2360(-1.91%)	123,342	102,897	99,142	100,148	95,000		
Total Distribution (1000 MT)	674,781	-7063(-1.04%)	681,844	634,669	616,869	629,311	620,510		
Yield (MT/HA)	2.93	(34%)	2.94	2.72	2.75	2.85	2.77		

- Record Production 405.3 mmts, Record Consumption 384.5 mmts
- Ending Stocks 121 mmts, Stx vs Use 31.4%
- Palm Oil and biofuels demand driving oil demand, improving meal demand from livestock sectors...

World Soybean Usage & End Stocks

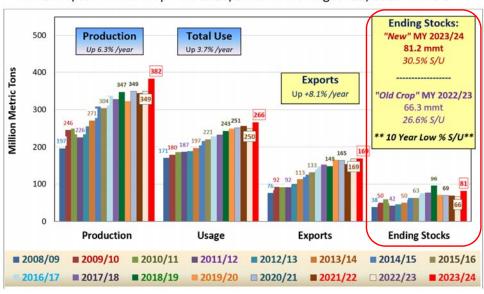
MY 2008/09 thru "New Crop" MY 2023/24 as of the August 11, 2023 WASDE



Current Market Outlook & Issues

World Less-China Soybean Use & End Stocks

MY 2008/09 - "New Crop" MY 2023/24 as of the August 11, 2023 WASDE

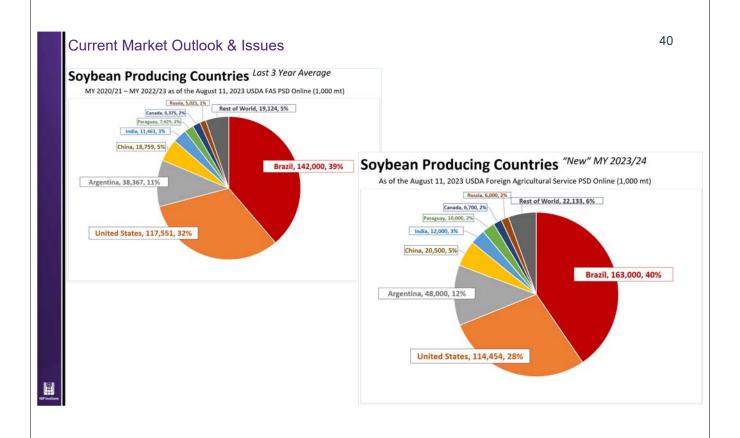


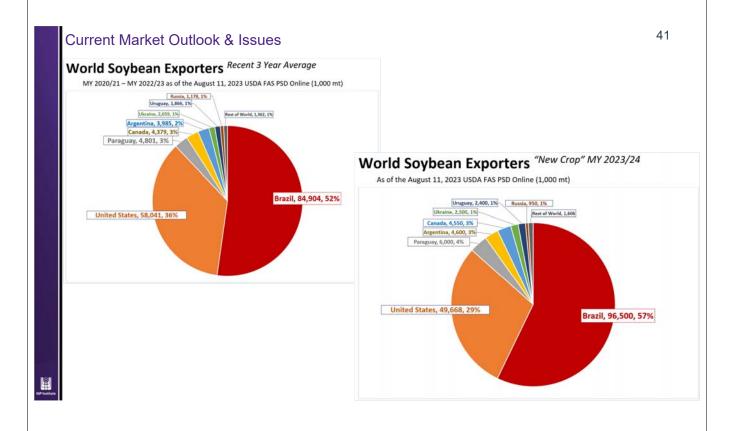
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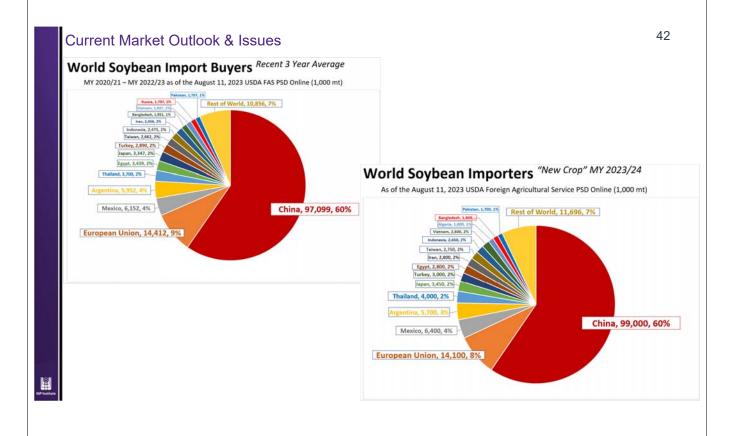
World vs "World Less-China" Soybean % Stocks/Use

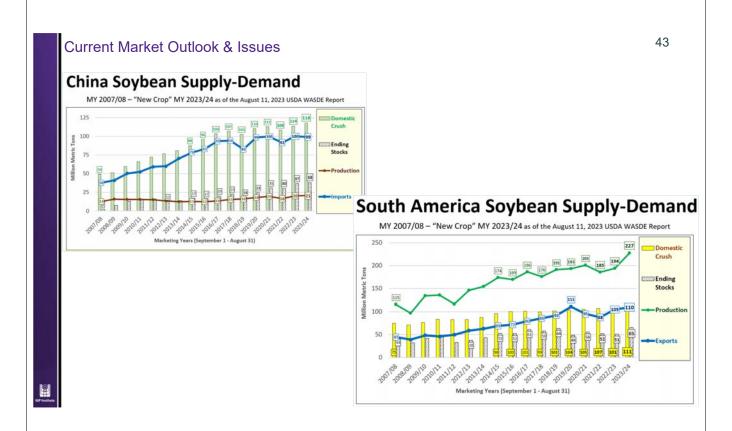
MY 2007/08 through "New Crop" MY 2023/24, as of the August 11, 2023 USDA WASDE report

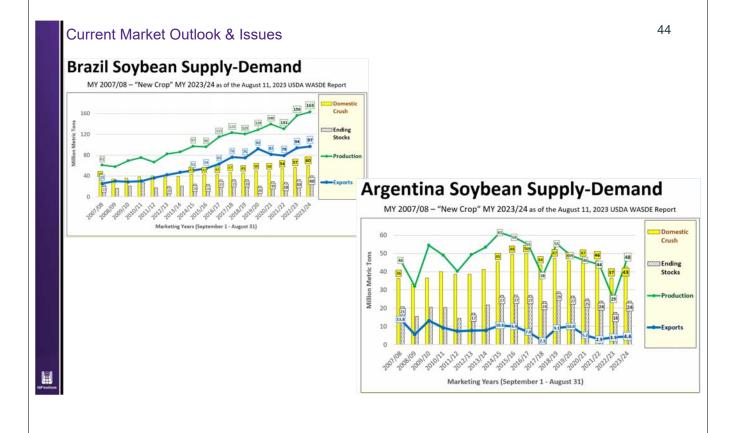






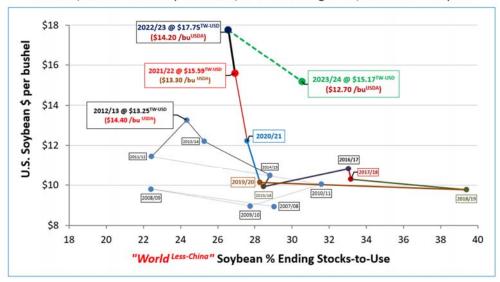






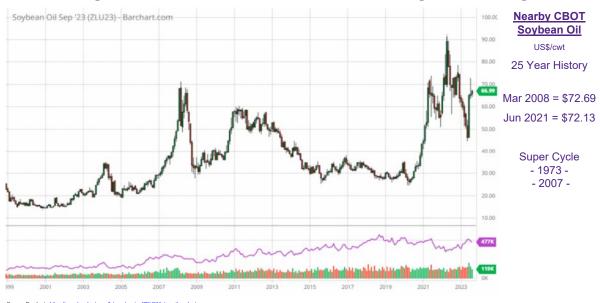
U.S. Soybean \$USD\$ Adj vs "World Less-China" % S/U

MY 2007/08 thru "New Crop" MY 2023/24 as of the August 11, 2023 WASDE Report



Current Market Overview, Outlook & Issues

U.S. Soybean Oil Situation – Nearby Monthly



Source: Barchart - https://www.barchart.com/futures/quotes/ZSH21/interactive-chart

Soybean Meal – U.S.

Meal, Soybean United States as of July 2023									
Attribute	23/24 Jul'23	Change	23/24 Jun'23	22/23	21/22	20/21	19/20		
Crush (1000 MT)	62,596	-272(43%)	62,868	60,419	59,980	58,257	58,910		
Extr. Rate, 999.9999 (PERCENT)	0.79	+(+1.28%)	0.78	0.79	0.78	0.79	0.79		
Beginning Stocks (1000 MT)	318		318	282	309	310	365		
Production (1000 MT)	49,147	-181(37%)	49,328	47,685	47,005	45,872	46,358		
MY Imports (1000 MT)	590		590	612	594	712	580		
Total Supply (1000 MT)	50,055	-181(36%)	50,236	48,579	47,908	46,894	47,303		
MY Exports (1000 MT)	13,426	-	13,426	12,701	12,283	12,406	12,549		
Industrial Dom. Cons. (1000 MT)	0		0	0	0	0	0		
Food Use Dom. Cons. (1000 MT)	0	-	0	0	0	0	0		
Feed Waste Dom. Cons. (1000 MT)	36,266	-181(5%)	36,447	35,560	35,343	34,179	34,444		
Total Dom. Cons. (1000 MT)	36,266	-181(5%)	36,447	35,560	35,343	34,179	34,444		
Ending Stocks (1000 MT)	363		363	318	282	309	310		
Total Distribution (1000 MT)	50,055	-181(36%)	50,236	48,579	47,908	46,894	47,303		
SME (1000 MT)	36,266	-181(5%)	36,447	35,560	35,343	34,179	34,444		

- Production Record 49.1 mmts, Domestic Consumption Record 36.3 mmts
- Exports Record 13.4 mmts
- Ending Stocks steady 0.36
- Biofuels demand driving oil demand, improving meal demand from livestock sectors...

 $Source: USDA\ FAS\ PS\&D\ - \ \underline{https://apps.fas.usda.gov/psdonline/app/index.html\#/app/compositeViz}$

Current Market Overview, Outlook & Issues U.S. Soybean Meal Situation – Nearby Monthly



Nearby CBOT Soybean Meal

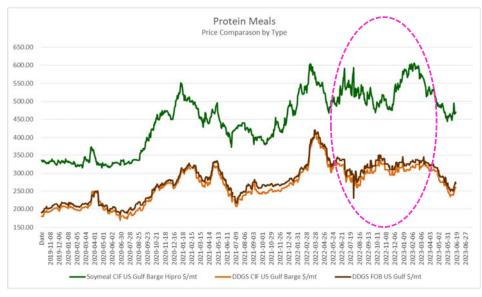
US\$/short ton
25 Year History

Sep 2012 = \$541.80 May 2021 = \$457.20

SBM Prices remain relatively strong on good demand from Livestock sector.

Source: Barchart - https://www.barchart.com/futures/quotes/ZSH21/interactive-chart

Current Market Overview, Outlook & Issues U.S. SBM CIF NOLA vs DDGS CIF NOLA, FOB



4 Year History

Prices reasonably correlated as SBM drives the pricing relationship across the protein complex.

June 22 - March 23

SBM volatility due to Argentina drought and production shortfall and its impact on world meal prices?

U.S. corn export forecast has literally gone south since December with the USDA cutting 425 mbu/20% from its estimate.

 $Source: Barchart - \underline{https://www.barchart.com/futures/quotes/ZSH21/interactive-charted and the properties of the prope$

WHEAT

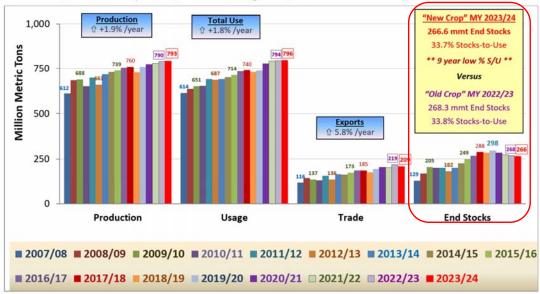
Wheat Outlook...

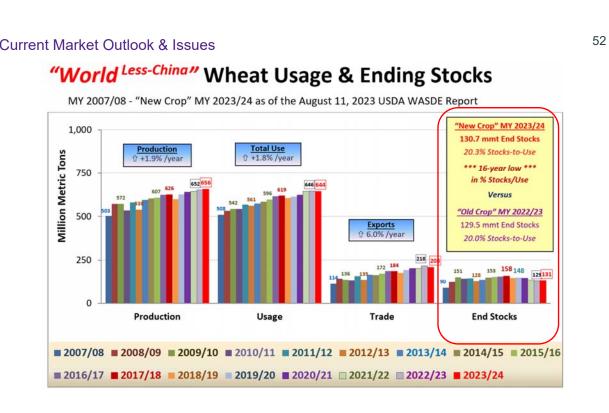
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World Wheat Usage & Ending Stocks

MY 2007/08 - "New Crop" 2023/24 as of the August 11, 2023 USDA WASDE Report

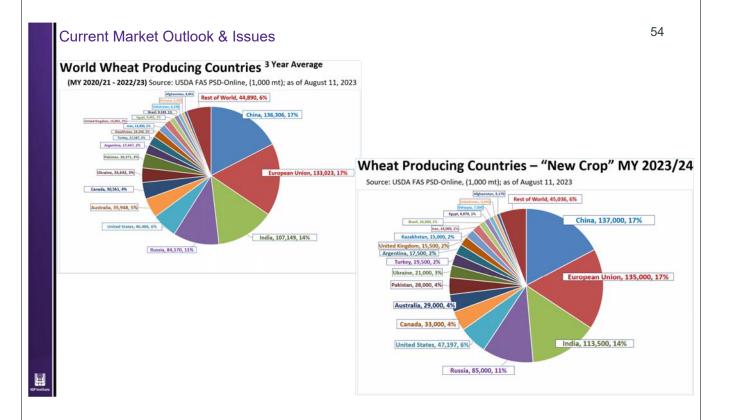


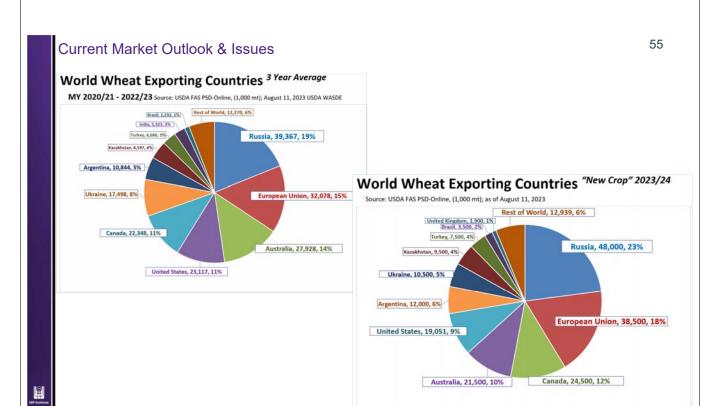


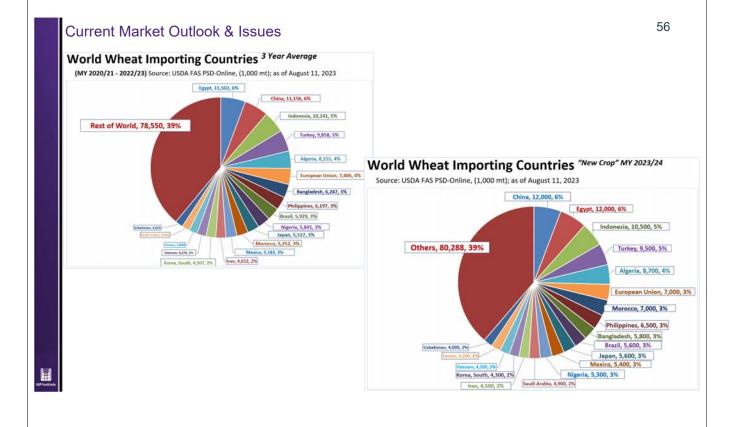
World vs "World Less-China" Wheat Stocks & % S/U

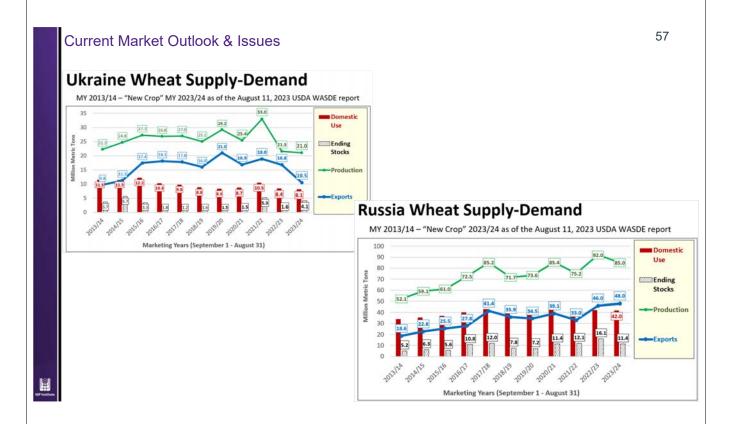
MY 2007/08 through "New Crop" MY 2023/24 as of the August 11, 2023 USDA WASDE report

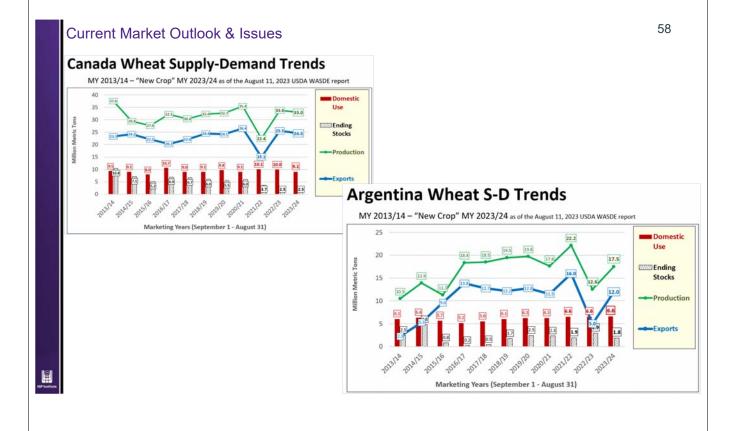


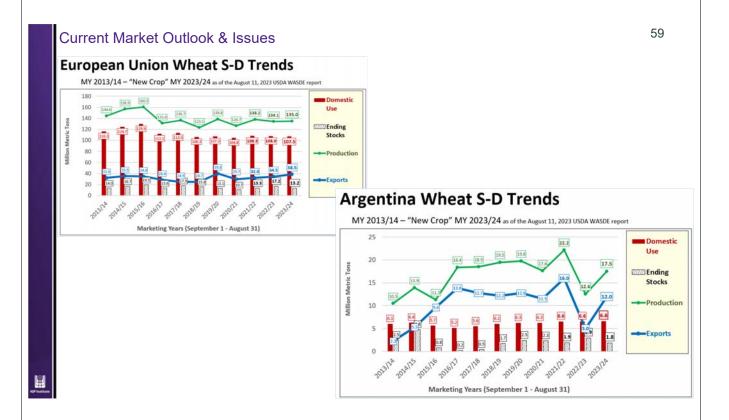


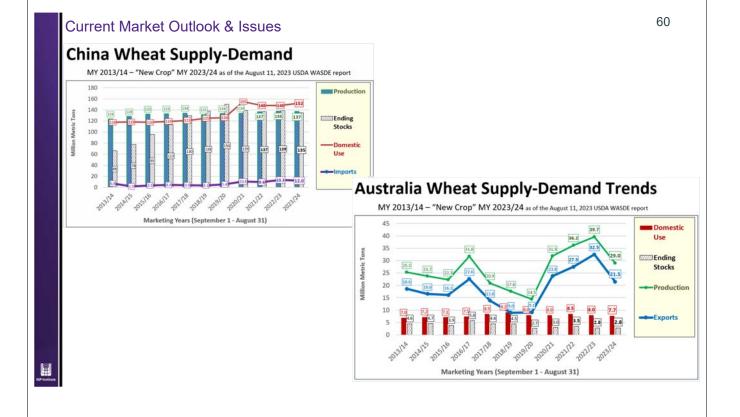






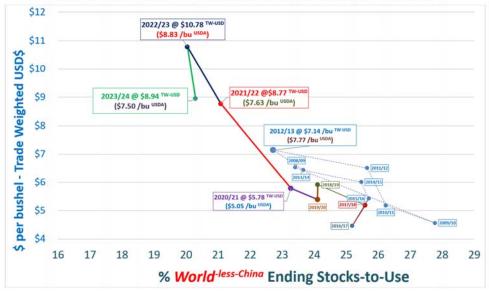






U.S. Wheat \$ Trade-Wtd USD\$ vs World Less-China % S/U

MY 2008/09 through "New Crop" 2023/24 as of the August 11, 2023 USDA WASDE

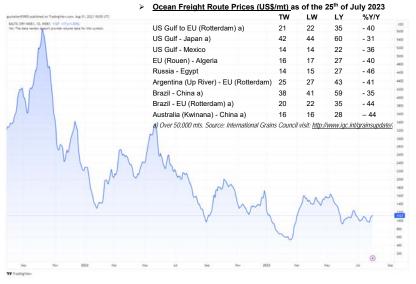


OCEAN FREIGHT

Blue Water Shipping...

Ocean Freight Overview London Baltic Exchange – Dry Index





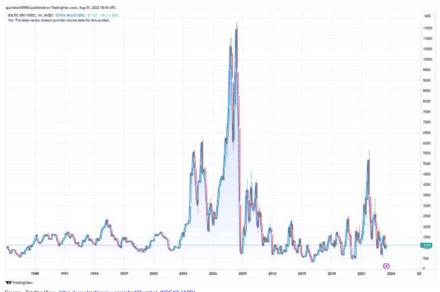
Dry Bulk Index - 1127

1st August 2023 5650 8th October 2021

- Ocean Freight has rallied to a thirteen year highs
- Robust demand as economies restock
- Capacity down in the wake of heavy "scrapping" program due to initial Covid19 impact
- Higher fuel costs in combination with tighter emission regulations
- Longer Routes: (Iron Ore)
- o Tubarao, Brazil (1) to Shanghai, China (12) = 10,857 nm
- Port Walcott, Australia (3) to Shanghai, China (12) = 3,309 nm

Source: Trading View - https://www.tradingv

Ocean Freight Overview London Baltic Exchange – Dry Index

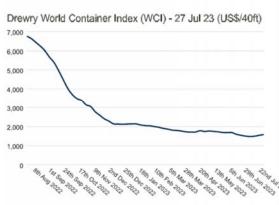




Dry Bulk Index - 1127

1st August 2023 - 2420 8th October 2021 1st May 2008 - 5650 - 11793

Ocean Freight Overview Container Freight Index





Source: https://fbx freightos.com

Our detailed assessment for Thursday, 27 July 2023

- The Composite Index increased by 2.5% to \$1,575.62 per 40ft container and is 76.7% lower than the same week in 2022.
- The Drewry WCI composite index of \$1,575.62 per 40-foot container is now 85% below the peak of \$10,377 reached in September 2021.
- It is 41% lower than the 10-year average of \$2,684, indicating a return to more normal prices,
- It is 11% higher than average 2019 (pre-pandemic) rates of \$1,420.
- US West Coast to East Asia has come down, but not as much as the Composite Index.

Source: Freightos - https://fbx.freightos.com/

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WEATHER

La Nina to El Nino...

Weather Impacts Southern Oscillation Index – La Nina



ENSO Outlook is at LA NIÑA.

The Bureau's El Niño Alert continues, with El Niño development considered likely in the coming weeks, despite the current lack of atmospheric response.

When El Niño Alert criteria have been met in the past, an El Niño event has developed around 70% of the time.

Sea surface temperatures (SSTs) in the tropical Pacific are exceeding El Niño thresholds, with climate models indicating this is likely to continue at least through to the end of the year.

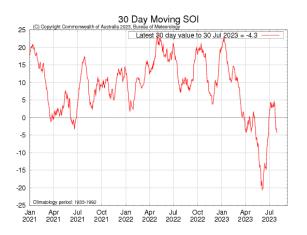
In the atmosphere, however, wind, cloud and broad-scale pressure patterns mostly continue to reflect neutral ENSO conditions. This means the Pacific Ocean and atmosphere have yet to become fully coupled, as occurs during El Niño events.

Southern Oscillation Index

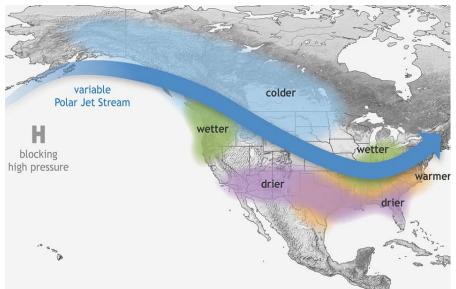
The 30-day Southern Oscillation Index (SOI) for the period ending 30 July 2023 was -4.3, with the value decreasing from +3.9 over the past fortnight. The 60-day SOI and the 90-day SOI were -2.7 and -7.9, respectively.

Sustained negative values of the SOI below -7 typically indicate El Niño, while sustained positive values above +7 typically indicate La Niña.

Source: Australia Bureau of Meteorology - http://www.bom.gov.au/climate/enso/

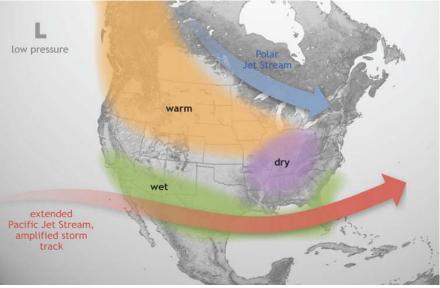


Weather Impacts Southern Oscillation Index – La Nina



La Niña causes the jet stream to move northward and to weaken over the eastern Pacific. During La Niña winters, the South sees warmer and drier conditions than usual. The North and Canada tend to be wetter and colder.

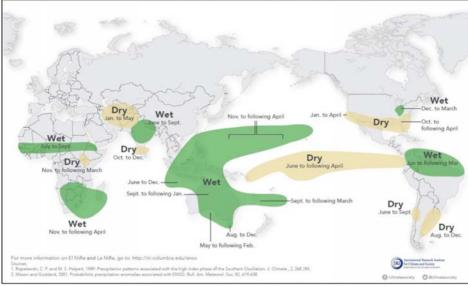
Weather Impacts Southern Oscillation Index – El Nino



El Niño causes the Pacific jet stream to move south and spread further east. During winter, this leads to wetter conditions than usual in the Southern U.S. and warmer and drier conditions in the North.

Source: https://oceanservice.noaa.gov/facts/ninonina.html

Weather Impacts Southern Oscillation Index – La Nina



Source: https://www.civilaffairsassoc.org/post/impacts-of-la-ni%C3%B1a-on-global-agriculture-what-can-the-u-s-army-do-about-it

Dry

- · Southern U.S.
- Argentina
- S. Brazil
- Middle East
- S. India
- East Central Africa

Wet

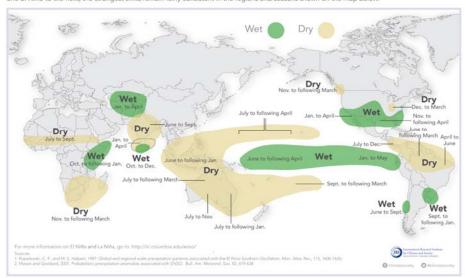
- N. South America
- Australia
- · Indonesia
- Philippines
- Central & Northern India
- Sud-Sahara Africa
- Southern Africa

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Southern Oscillation Index – El Nino El Niño conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. Although the

Weather Impacts

El Niño conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. Although they vary somewhat from one El Niño to the next, the strongest shifts remain fairly consistent in the regions and seasons shown on the map below.



Source: https://www.civilaffairsassoc.org/post/impacts-of-la-ni%C3%B1a-on-global-agriculture-what-can-the-u-s-army-do-about-it

Dry

- NE. U.S. Cornbelt
- N. South America
- Australia
- · Indonesia
- Philippines
- Central & Northern India
- Sud-Sahara Africa
- Southern Africa

Wet

- Southern U.S.
- N. Argentina
- S. Brazil
- · Central Chile
- N. Central Asia
- S. India
- East Central Africa

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THANK YOU FOR YOUR ATTENTION

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