

# Agricultural Outlook

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2019 Fertilizer Outlook and Technology Conference

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# Agenda

- Macro Economic Outlook
- Global acreage, yield, and production trends
- Global consumption trends
- Long-term price outlook for basic ag commodities
- Policy highlights (focus on trade)
- Overview of technology trends



# Macro Economic Outlook

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- Stability or global recession?

## Future macroeconomic trends and risks

- With soft global demand growth, commodity prices are restrained, and so is overall inflation.
- Near-term monetary policies will remain accommodative, but the already low interest rates and sizable fiscal deficits in many countries leave little scope for policy stimulus in the next recession.
- The US dollar should appreciate moderately in the near term, based on favorable rates of return and risk aversion.
- Vulnerability to shocks rises as economic growth diminishes.
- Downside risks include escalating US-China tensions, new trade conflicts, war in the Middle East, a hard Brexit, and rising debt levels.

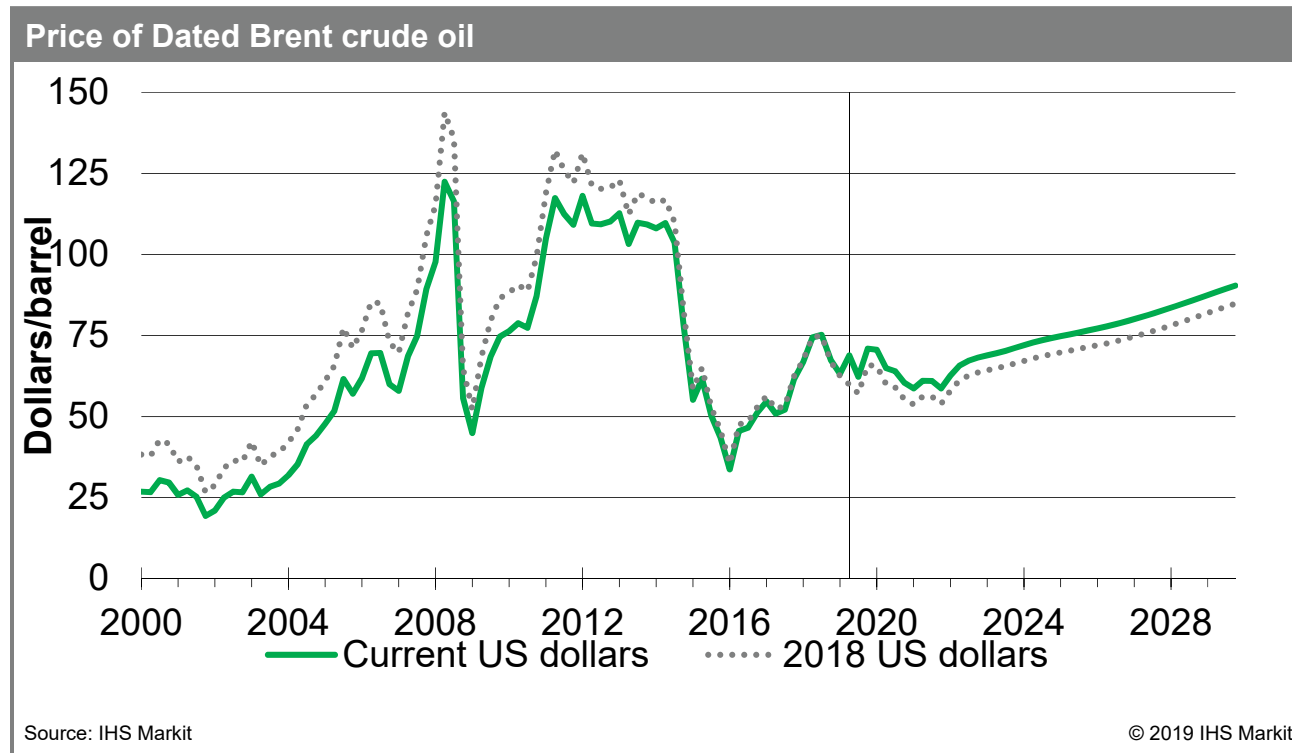
# Real GDP growth in major economies is slowing nearly everywhere

Real GDP					
Percent change	2017	2018	2019	2020	2021
World	3.4	3.2	2.7	2.6	2.6
United States	2.4	2.9	2.3	2.1	1.9
Canada	3.0	1.9	1.4	1.3	1.6
Eurozone	2.7	1.9	1.1	0.8	1.0
United Kingdom	1.8	1.4	1.0	0.5	0.9
China	6.7	6.6	6.2	5.7	5.6
Japan	1.9	0.8	1.1	0.3	0.6
India*	7.1	6.8	6.1	6.4	6.9
Brazil	1.1	1.1	0.8	1.3	1.5
Russia	1.7	2.2	1.3	1.7	1.8

\* Fiscal years starting 1 April  
Source: IHS Markit

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## Dated Brent now expected to average 66.3 US\$/bl in 2019, and 65 US\$/bl in 2020



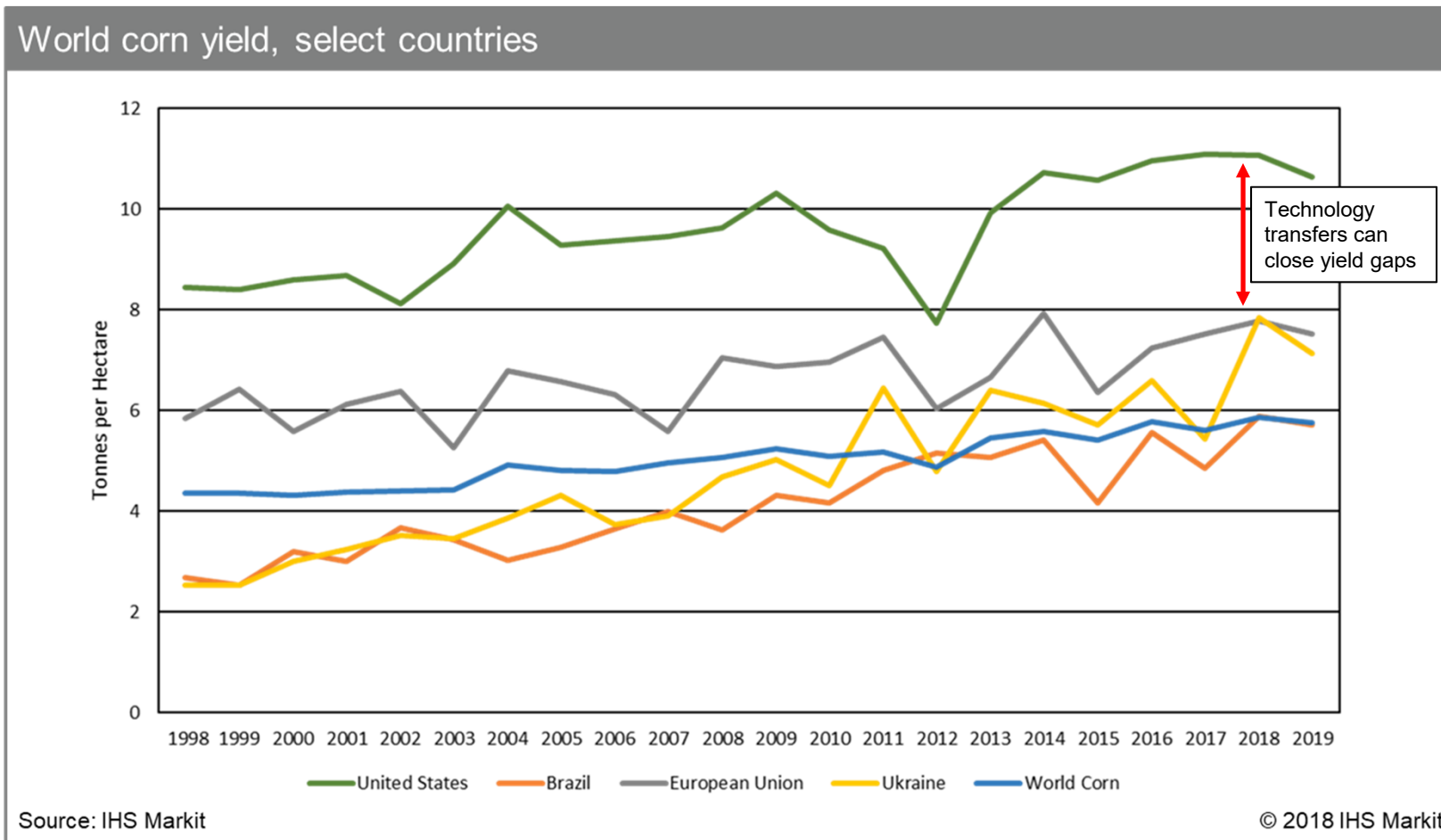


# Global acreage, yield and production trends and highlights

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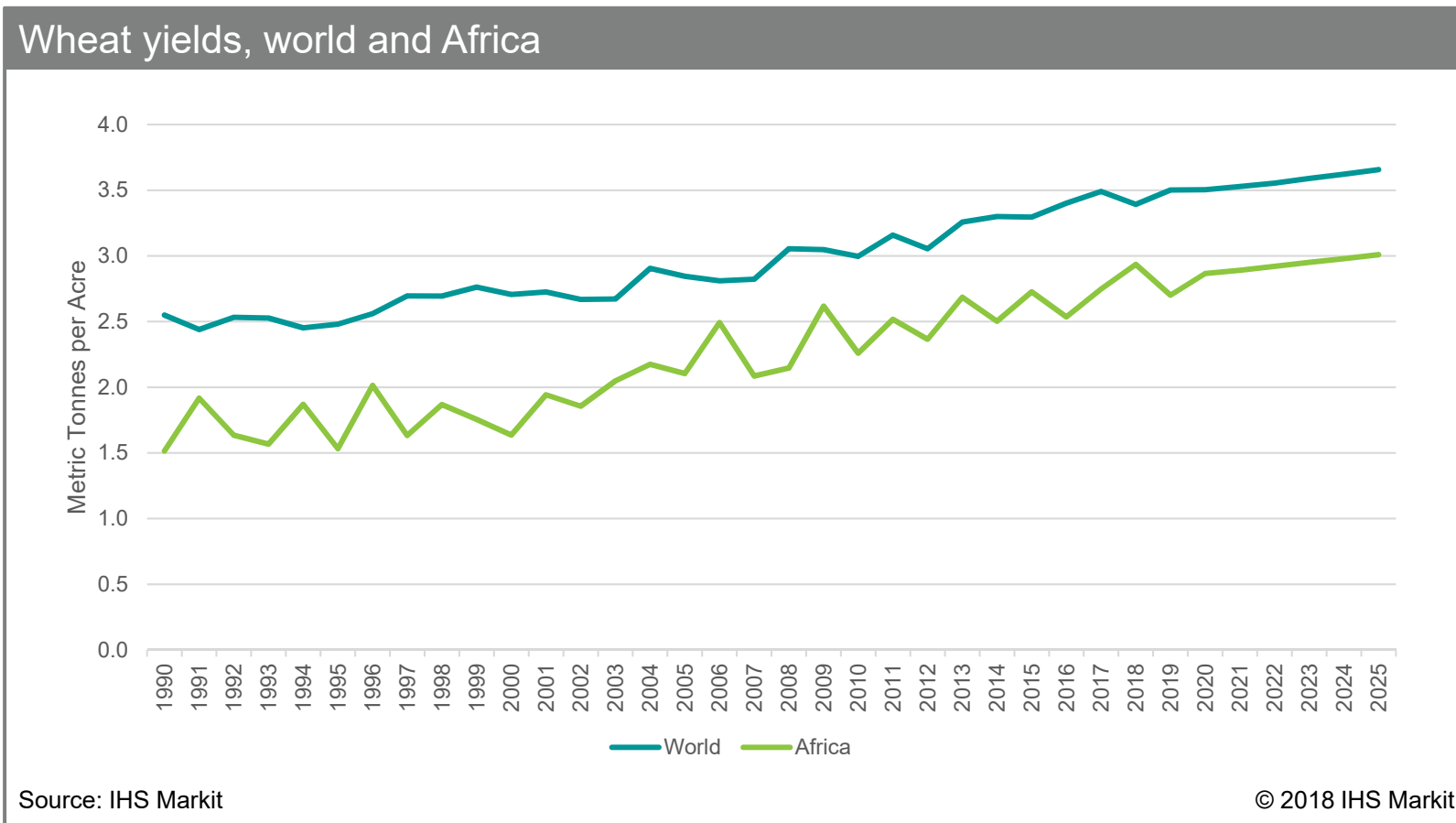
- Where are we growing, shrinking, why?

# Trend yields will continue to increase driven by technology

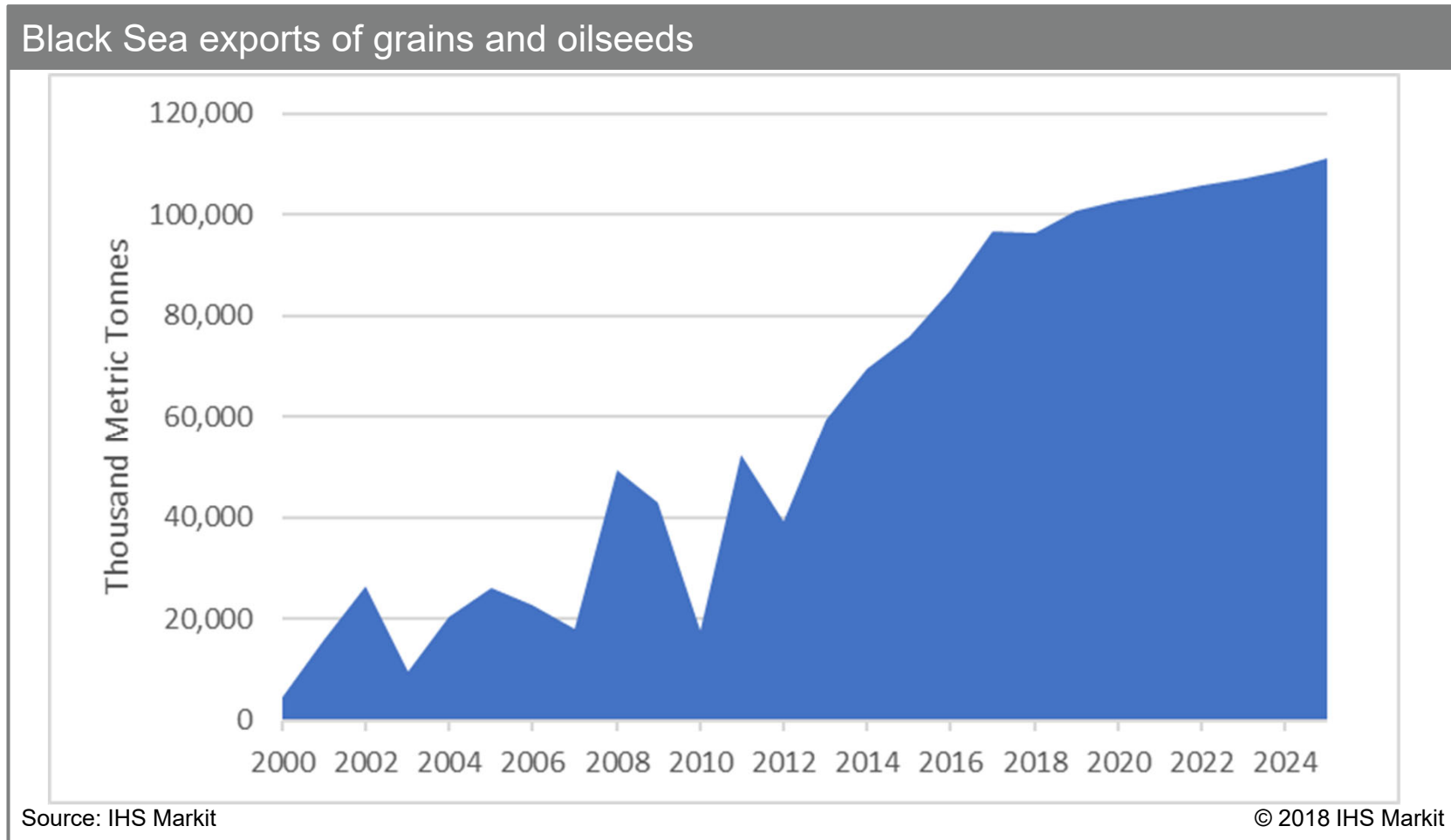




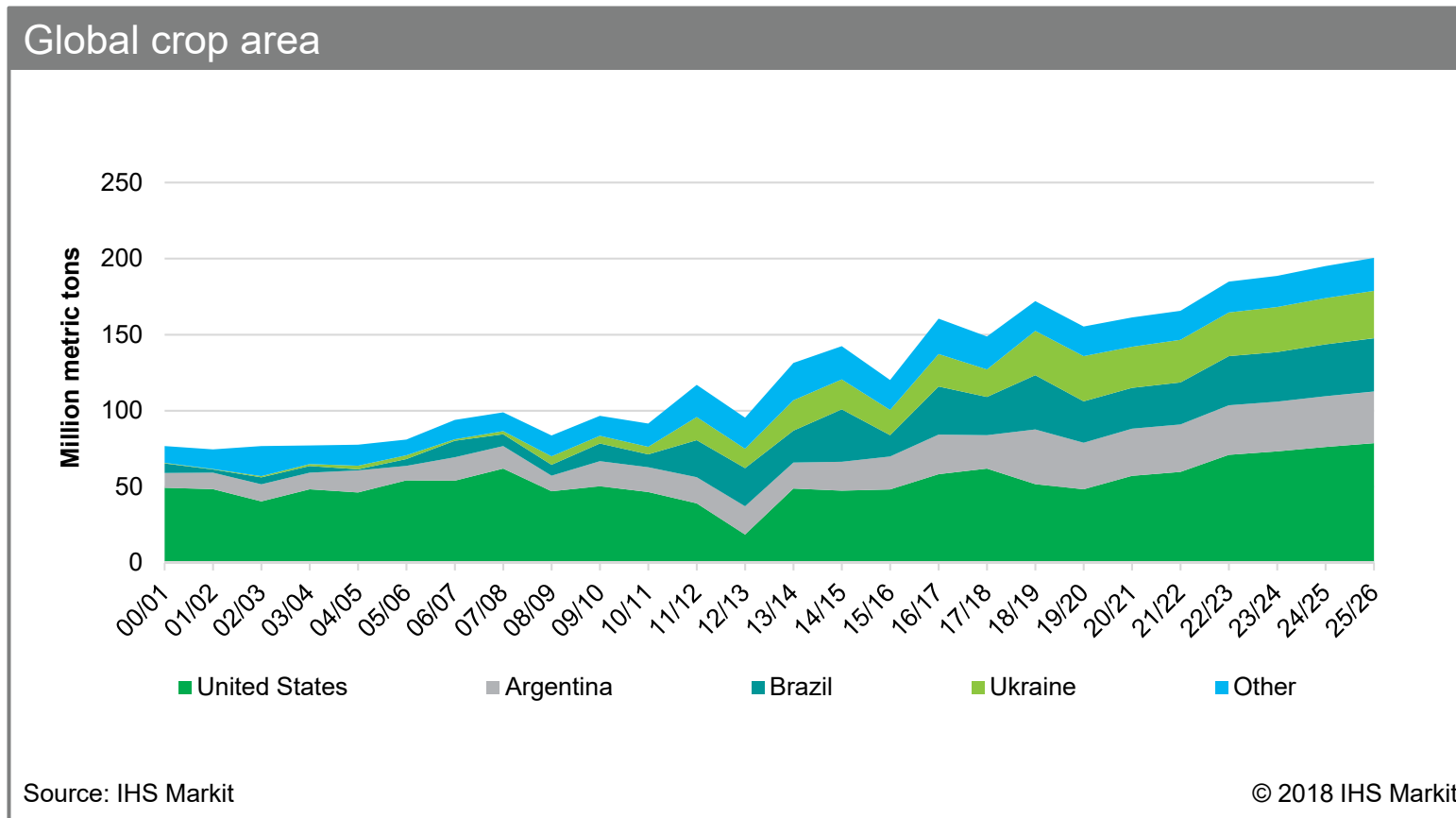
# There is a “technology gap” in agriculture in regions such as Africa. Can gap be filled and yields increase beyond trend?



## The Black Sea region is an example of how new sources of grain and oilseed supplies have come onto the market

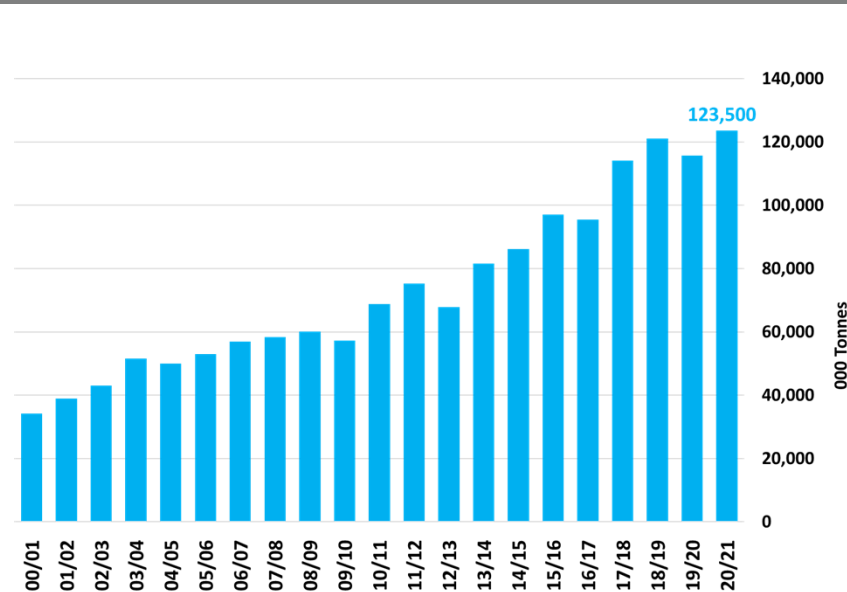


# Diversity of corn exporters adds increased options for importers; better yields and favorable cost of production



# Soybean production increases in Brazil have matched import increases in China

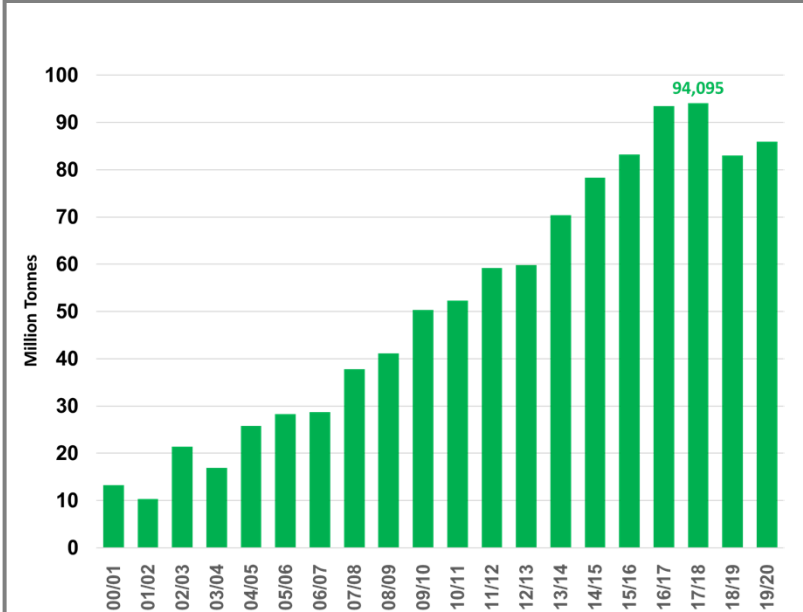
Brazil soybean production



Source: IHS Markit

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China soybean imports



Source: IHS Markit

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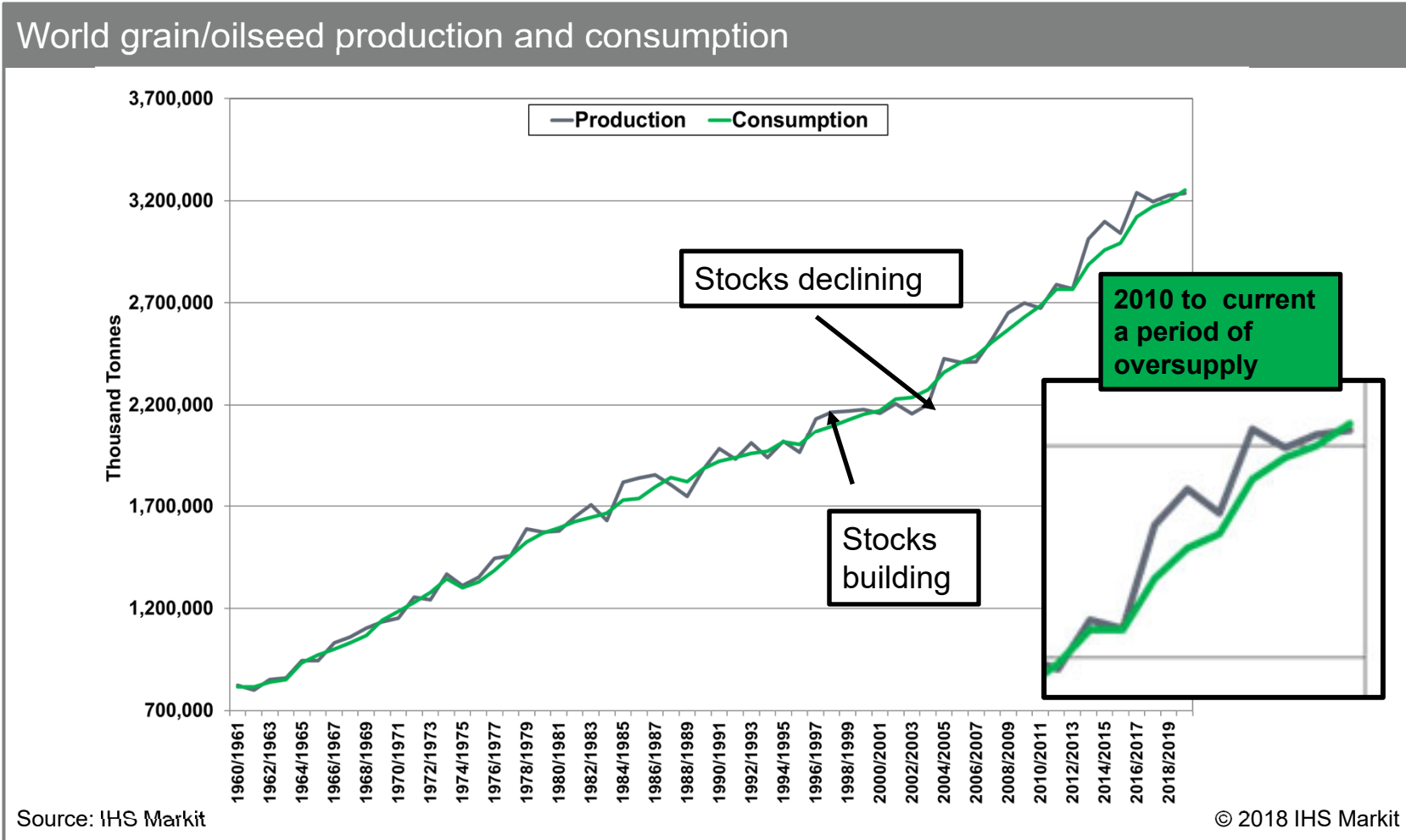


# Global consumption trends

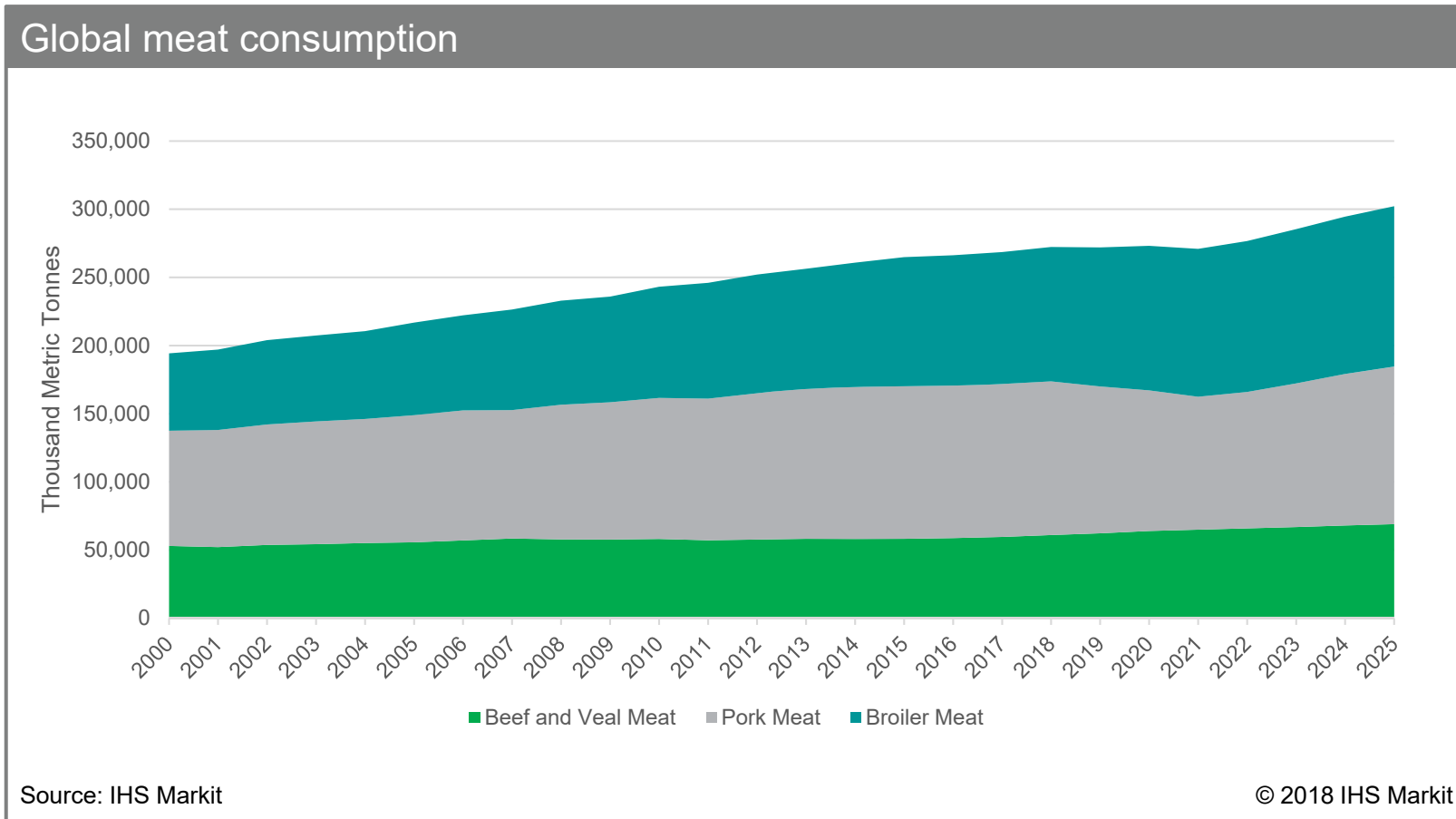
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- Where are we growing?

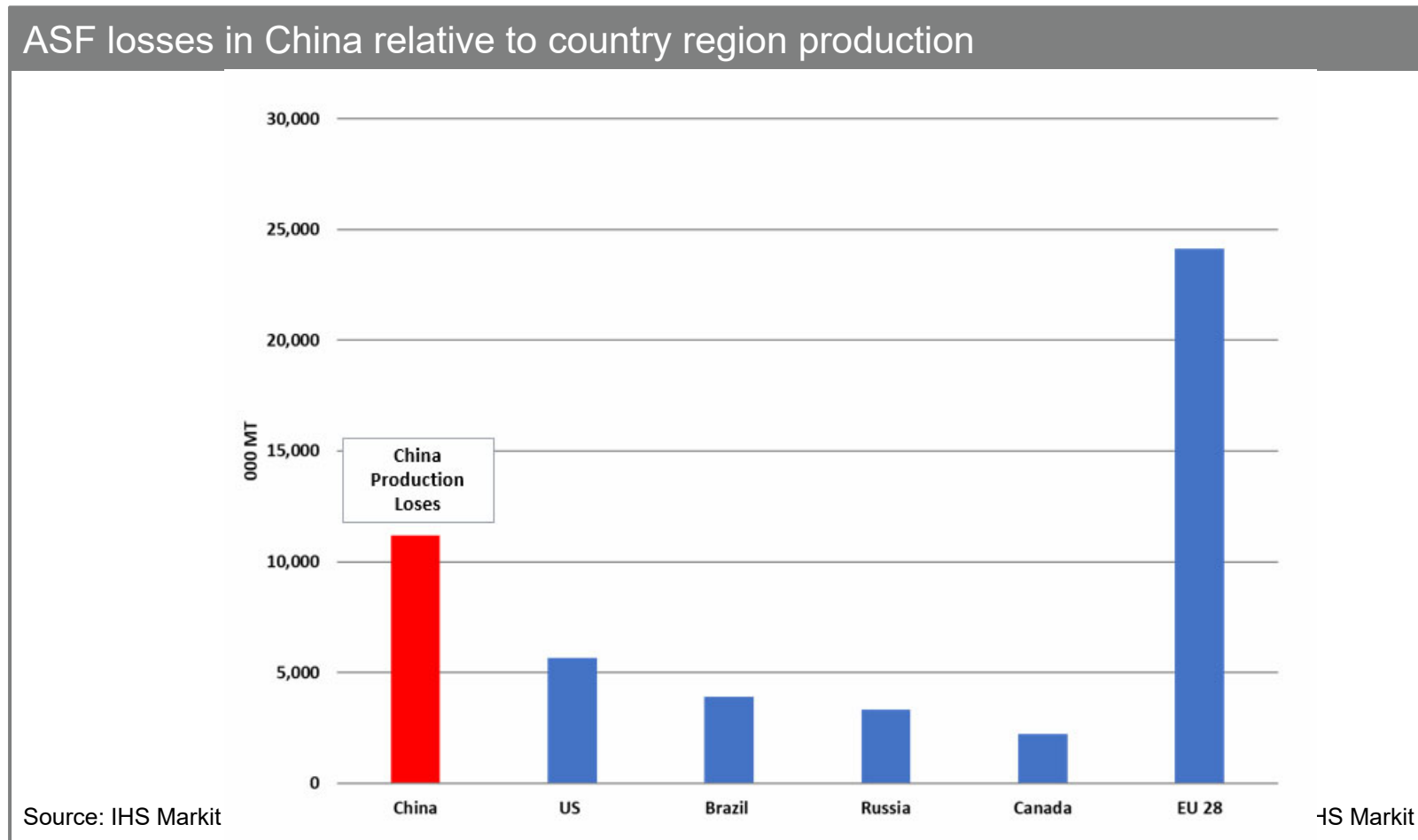
# Over the long-term, supply matches demand. It is the short term that creates price movement



# Near term disease and economic issues will interrupt the strong increase in meat consumption since 2000

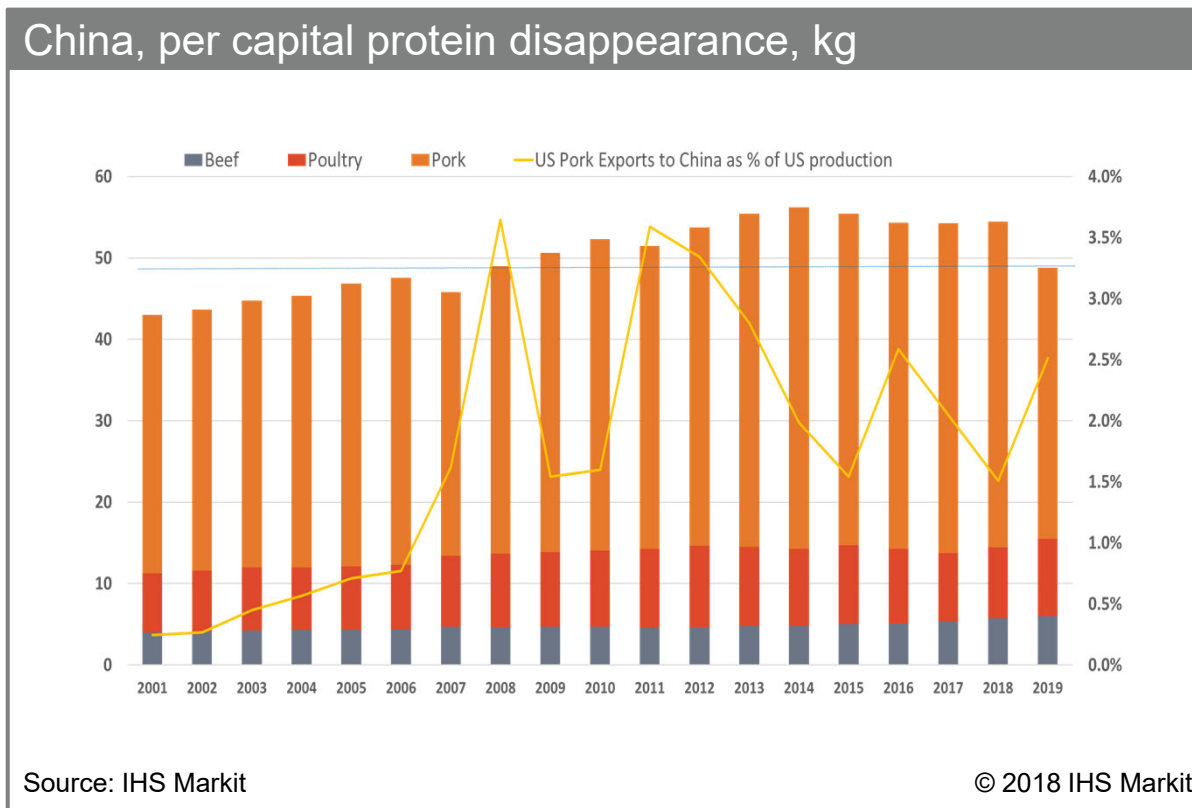


# African Swine Fever production losses in China are greater than the pork production of the US and Brazil combined





# Chinese meat consumption, especially pork, is declining



- While ASF can't transmit to humans, consumers are wary
- Supply is out of balance with demand, trade war does not help
- Decline in pork production is likely consistent with gov't of China's desire to shift consumption to "healthier" proteins (fish, plant based)



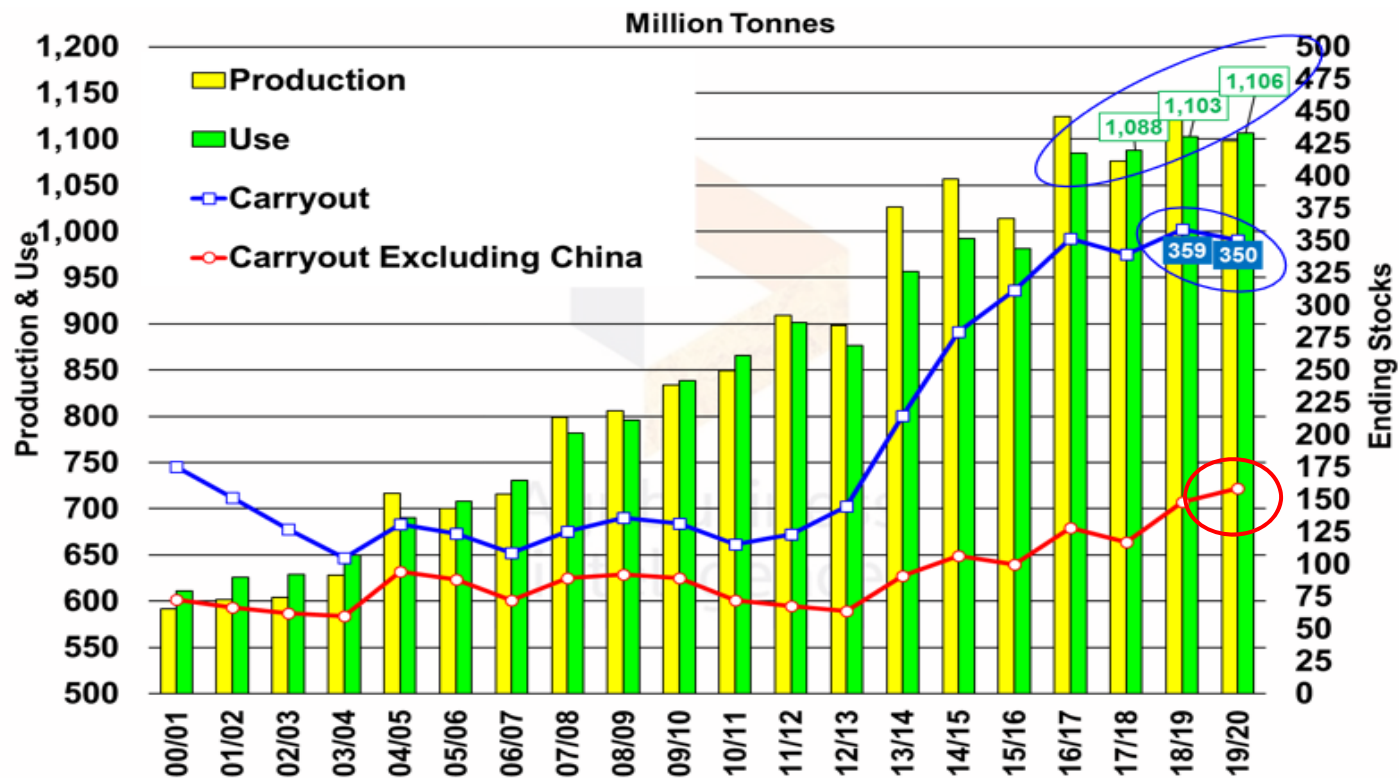
# Long-term price outlook for basic agriculture commodities (corn, soybeans, wheat)

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- When will we emerge from the current low price environment?

# Record global corn usage but despite significantly lower production, carryout stock levels are still high

World corn supply, demand, carryout

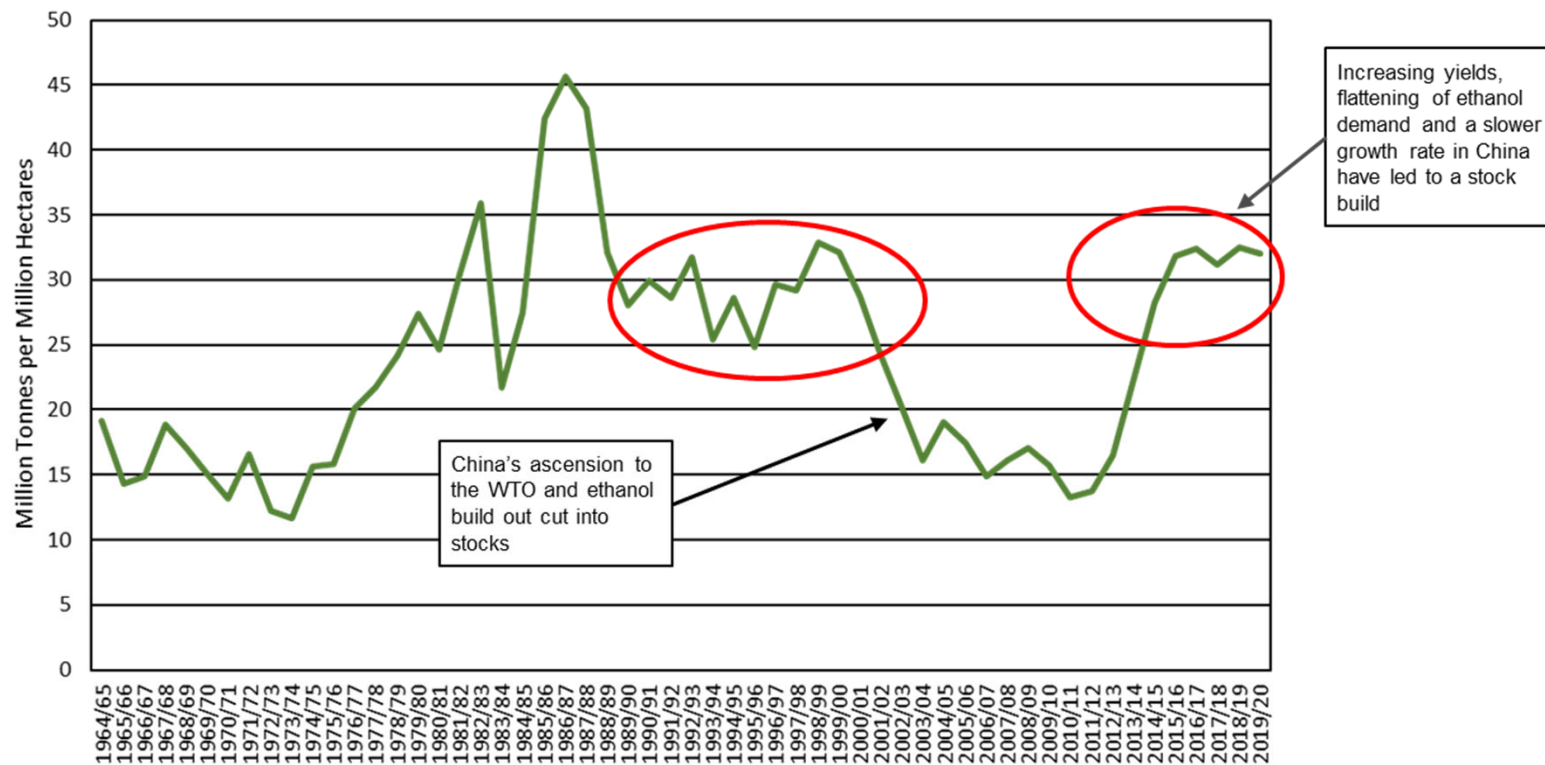


Source: IHS Markit

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# Are we entering an era of agricultural commodity prices that looks like the 1990's?

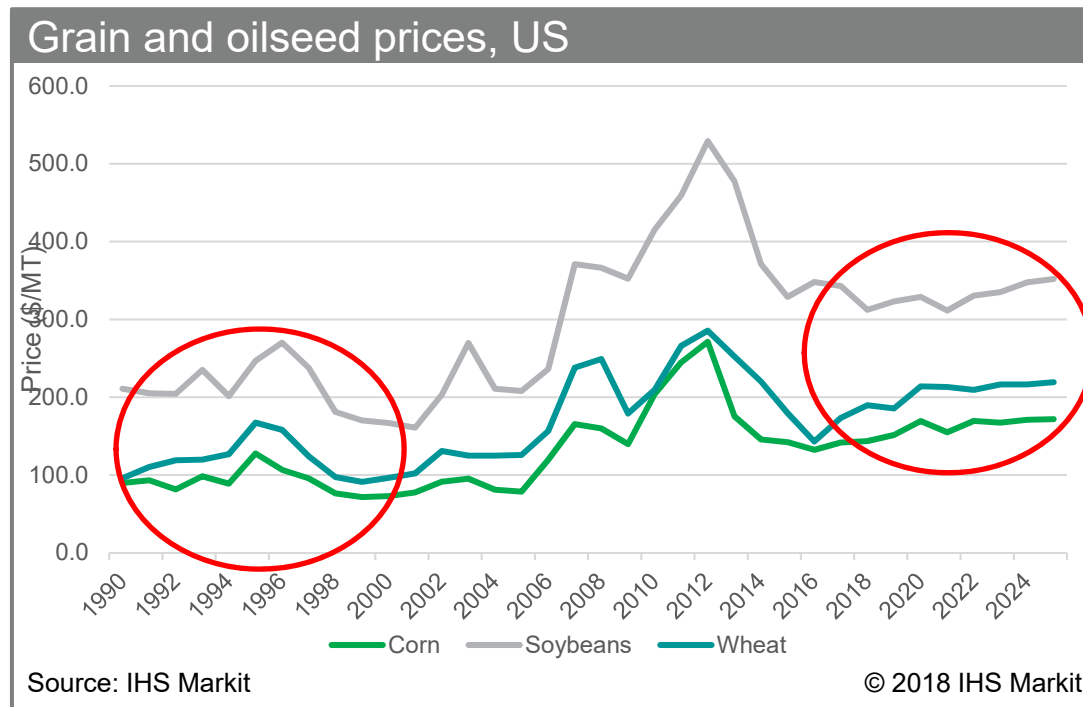
World corn stock/use ratio



Source: IHS Markit

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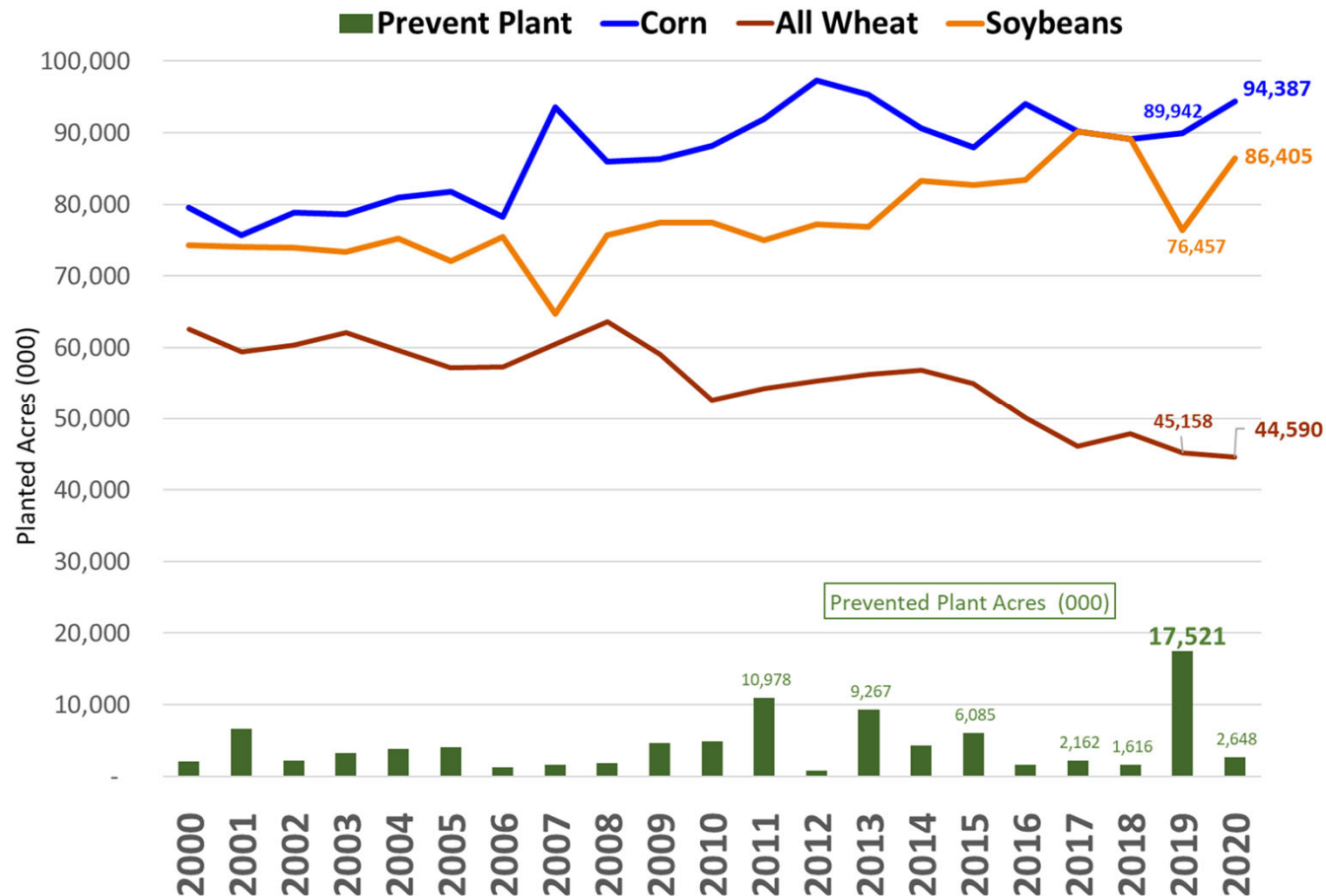
## Prices have found a bottom, but supplies are still weighing on prices



- We have likely found a cyclical bottom, but supplies, trade issues and ASF will mute price increase
- Remember, this is agriculture and weather is always a factor
- Beyond 2024 technologies such as gene editing, digital farming and shifting consumer trends will be a factor

# In the US, we expect significant recovery in planted acres of corn and soybeans

## United States Planted Acreage



## The bad news, at trend yields the recovery in acreage will lead to yet more supply and likely price pressure

Acreage and Production: Selected Crops, US (Domestic & Metric Units)									
	Planted Area			Harvested Area		Yield		Production	
	2019	2020	% Change	2019	2020	2019	2020	2019	2020
Domestic Units 1/									
<b>Corn</b>	89,942	<b>94,387</b>	105	81,815	86,814	167.0	<b>178.0</b>	13,661	<b>15,454</b>
Grain Sorghum	5,260	5,365	102	4,715	4,865	75.9	76.2	358	371
Oats	2,810	2,869	102	826	1,105	64.3	66.8	53	74
Barley	2,721	2,834	104	2,182	2,338	77.7	75.5	170	177
<b>Soybeans</b>	76,457	<b>86,405</b>	113	75,626	85,551	46.9	<b>51.0</b>	3,550	<b>4,363</b>
Cotton, Upland	13,531	12,055	89	12,281	10,525	784	851	20,070	18,656
Cotton, Am-Pima	231	231	100	228	229	1,570	1,519	747	723
<b>All Cotton</b>	<b>13,762</b>	<b>12,286</b>	89	<b>12,509</b>	<b>10,754</b>	<b>799</b>	<b>865</b>	<b>20,817</b>	<b>19,379</b>
Sunflowers	1,359	1,371	101	1,307	1,311	1,724	1,703	2,253	2,232
Rice	2,540	3,020	119	2,477	2,981	7,587	7,597	187.9	226.5
Winter Wheat	31,159	30,050	96	24,327	23,917	53.6	51.0	1,304	1,220
Durum	1,339	1,340	100	1,175	1,303	45.7	41.4	54	54
Other Spring	12,660	13,200	104	11,660	12,930	48.2	48.0	562	621
<b>All Wheat</b>	<b>45,158</b>	<b>44,590</b>	99	<b>37,162</b>	<b>38,150</b>	<b>51.7</b>	<b>49.7</b>	<b>1,920</b>	<b>1,895</b>



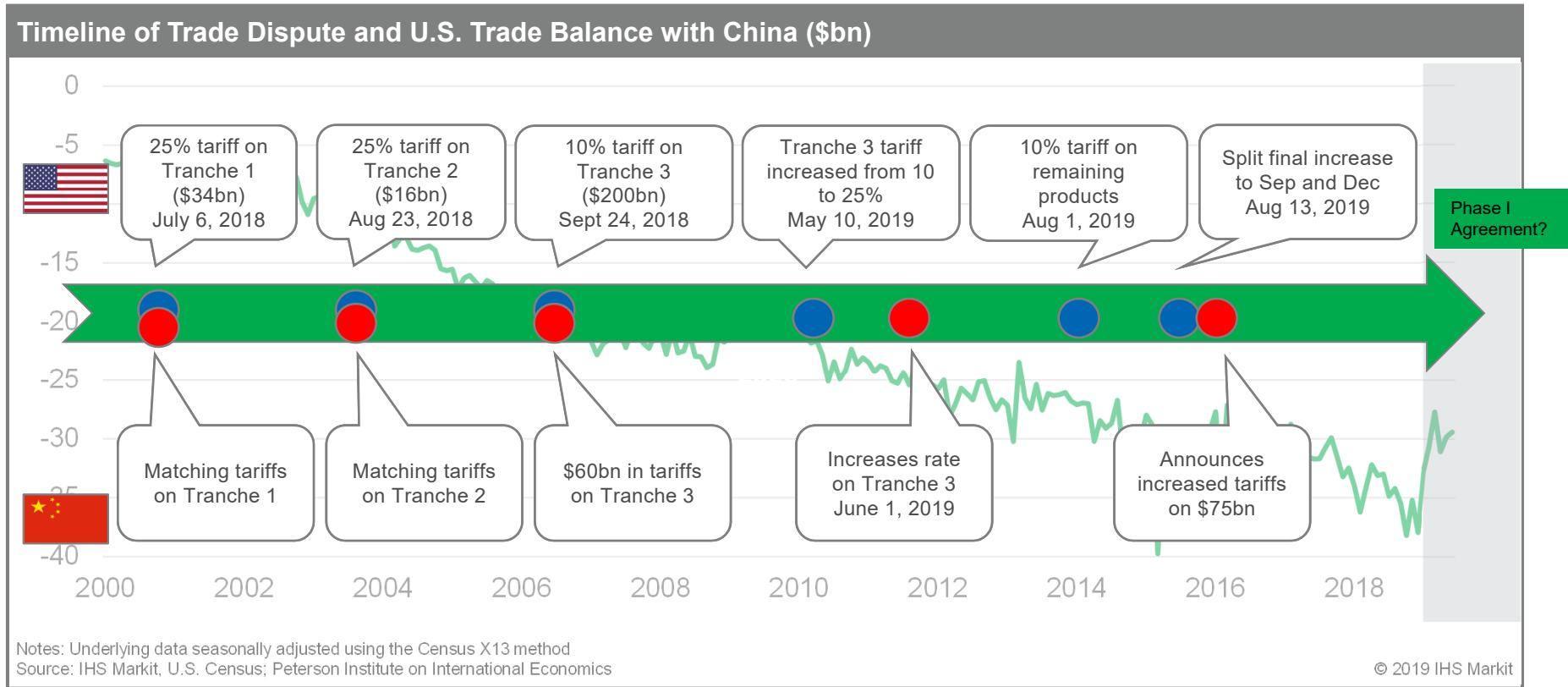
## Policy highlights (focus on trade)

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- It's a new world, where do we go from here?

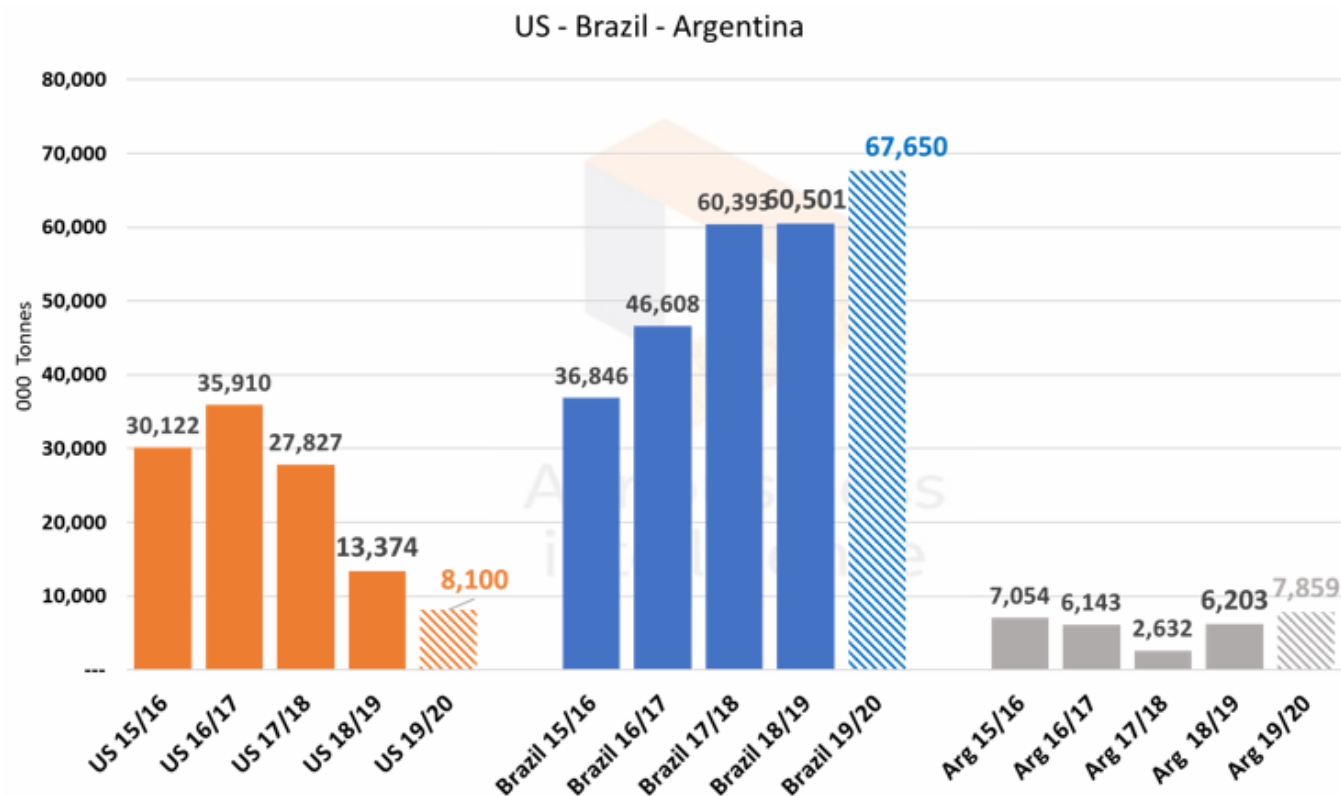


# The trade war has known several “tit for tat” episodes - more could come



# The US-China trade dispute has massively changed global trading patterns

Chinese soybean imports by origin



Source: IHS Markit

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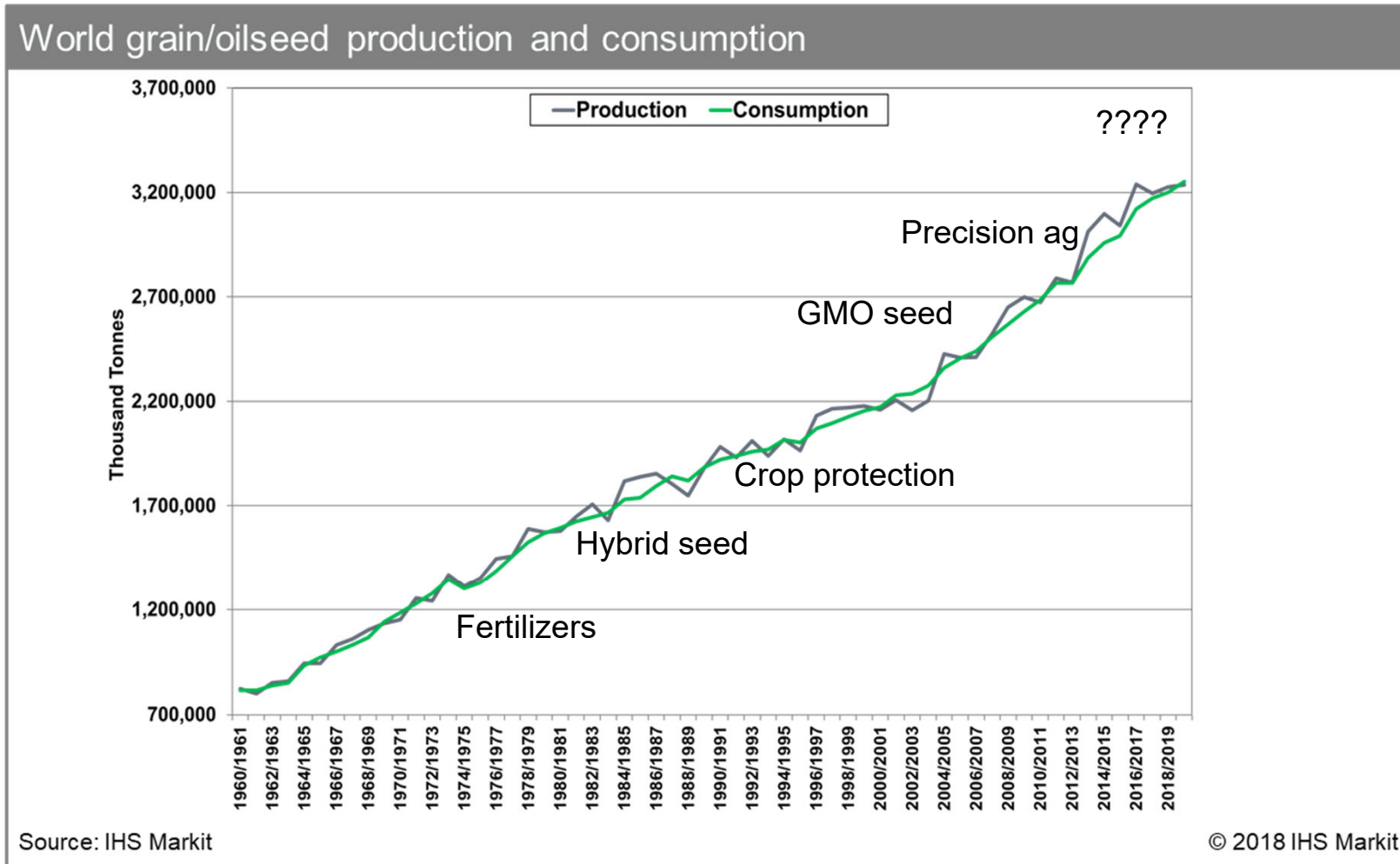


# Technology trends overview

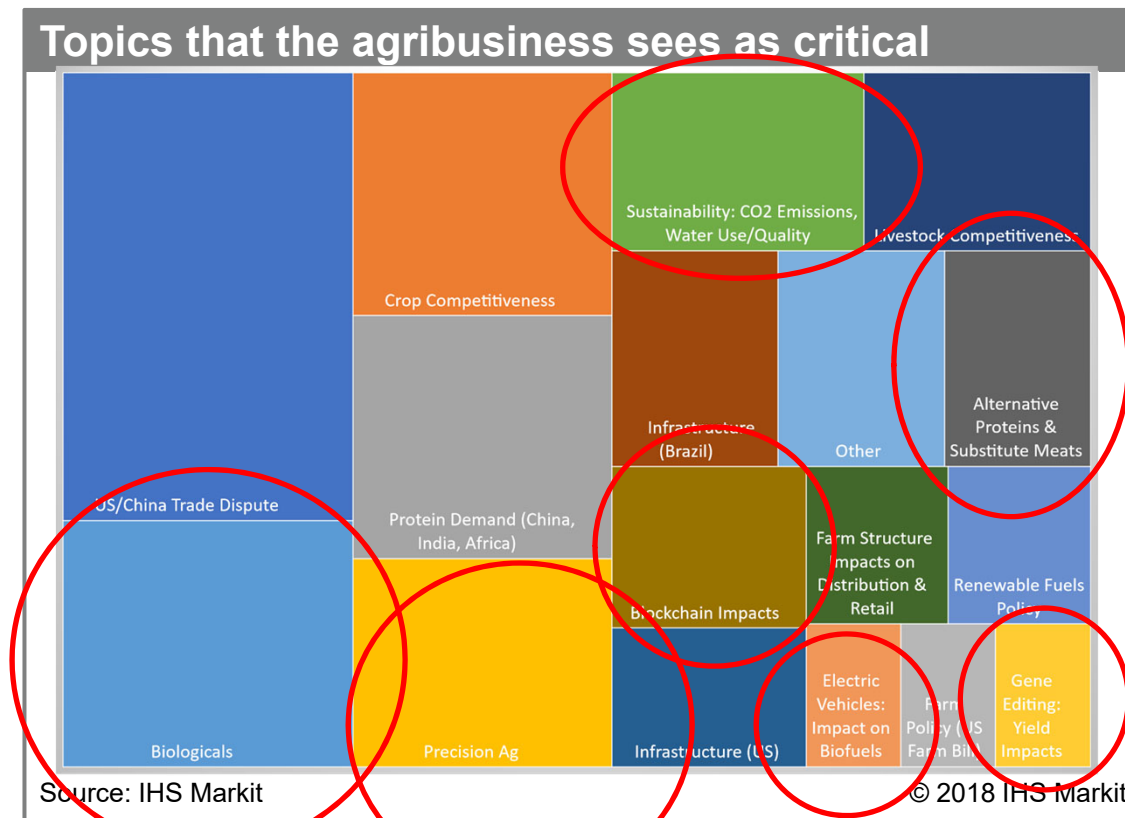
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- How will technology drive future yield growth?

# Technology has been the factor that has driven most of the production increases, not increases in land



## Along with typical market concerns, agribusiness community sees technology changes as a major driver and both an opportunity and a threat



Major issues in tech space clients see as important:

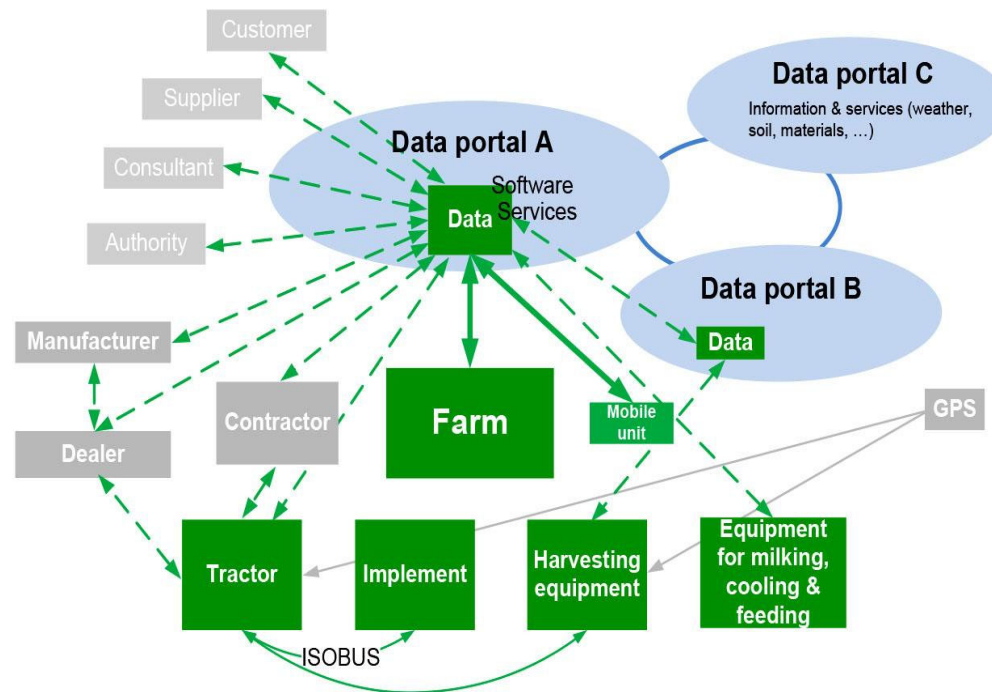
- Biopesticides
- Precision ag
- Sustainability
- Blockchain
- Alternative proteins and substitute meats
- Electric vehicles
- Gene editing

## Key issues around gene editing

- It has significant advantages compared with Traditional GMO
- Easier but more precise
- Cheaper, faster than GMOs
- 10% of cost of GMO and less than half the time
- Potential for less regulation
- The impact may not as big and as fast as we think
- Global regulatory landscape is hard to predict
- Core patents may not be concentrated within seed industry players
- Start-ups supplying novel traits can become an active player
- Diverse products + IP may demand omnibus supply chain

# Two critical elements are necessary to make digital farming work

## Example of a digital farm network



Source: IHS Markit

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- **Smart machines:** machines must be able to receive, send, generate (via sensors) and process data through the DF network
- **Connected machines:** communication and interface standards must permit seamless data exchange between machines, with business partners and among data portals

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