S&P Global
Commodity Insights

Australian Grain Industry Conference 2025

China's adoption of GE soybeans & corn

What are the potential implications for agri supply chains?

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What do we know about GE crops?

- Increase yields, reduce yield variability between harvests, allow potential expansion into previously non-arable land, lower farm input costs

- China prohibits cultivation of foreign-developed biotech products
- ChemChina acquires Syngenta in 2017
- Main goal is to increase food and feed self-sufficiency

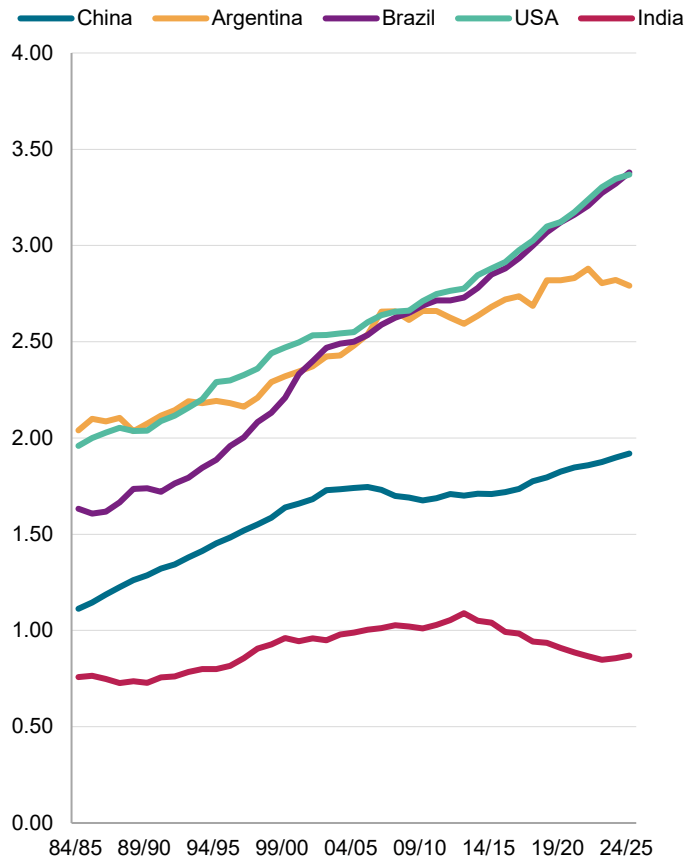
- In Dec 2023, MARA announced the registration of 51 GE soybean & corn varieties, and issued 26 GE seed production/operation licences, clearing the way for commercial cultivation
- As of Apr 2025, this has been expanded to 161 varieties and 54 licences

- However, China has not yet approved GE soybean & corn cultivation outside of designated pilot areas

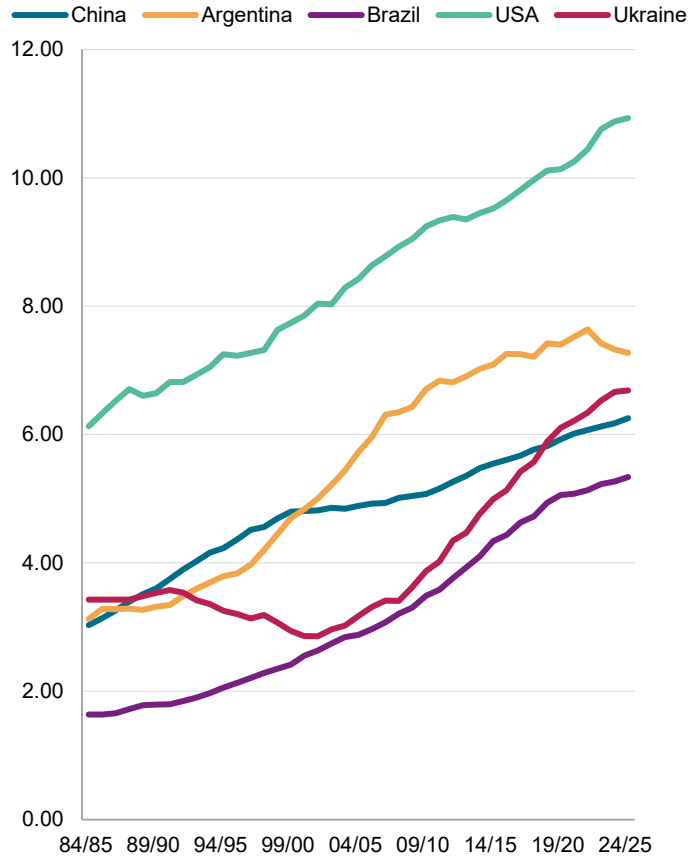
Source: S&P Global Commodity Insights

China’s soybean & corn yields lagging, GE crops not a silver bullet

Global soybean yields 10-year MA (MT/ha)



Global corn yields 10-year MA (MT/ha)

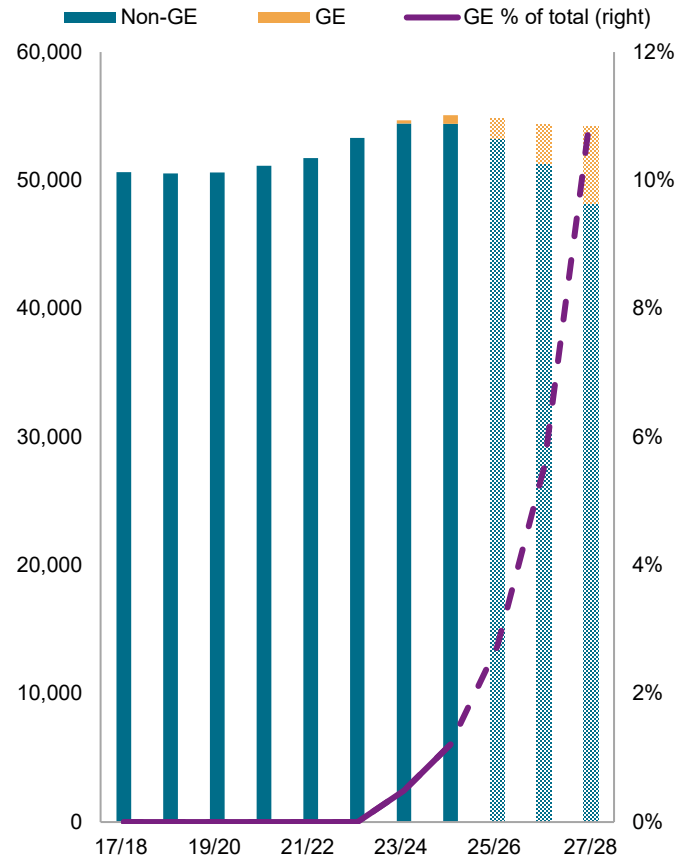


- China yields around 55-60% of USA for both soybeans & corn
- Even with full GE adoption, China’s yields face limiting factors such as soil quality, water availability and farming practices
- China’s current GE crops only address biotic stresses which will limit ability to push into previously non-arable land

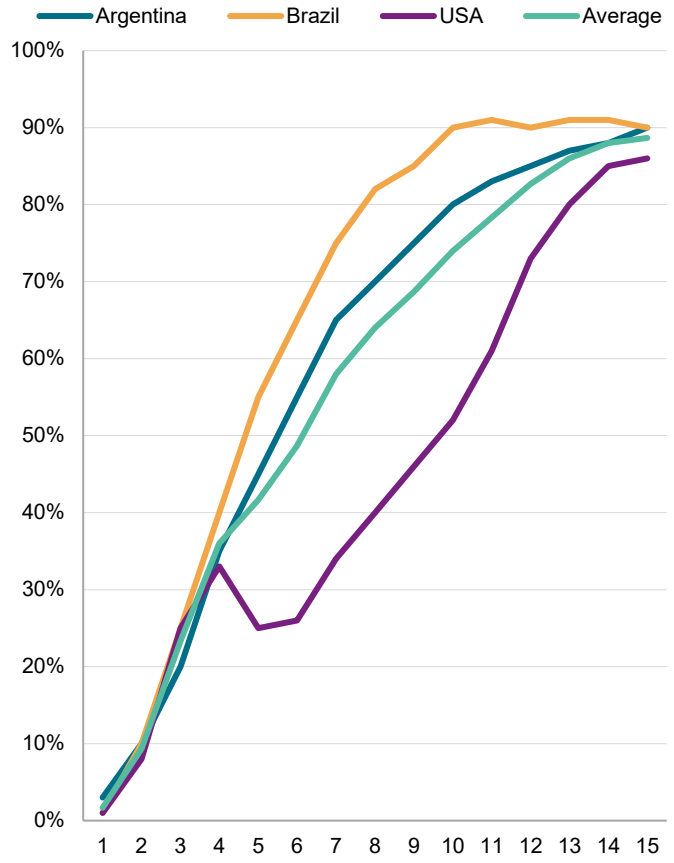
Source: S&P Global Commodity Insights; USDA ERS

The biggest unknown remains the pace of adoption

China GE soybean & corn acreage (1,000 ha)



Global GE corn adoption pace (% of total corn acreage)



- Currently most of China's GE acreage is dedicated to corn, with reports suggesting up to 3/4 of area
- GE crops adoption pace has tended to follow an S-curve
- Short-term: GE plantings likely to be concentrated in high pest-pressure regions; focus on building public confidence
- Medium-term: stakeholders should monitor timelines of variety approvals and scale of pilot expansions

Source: S&P Global Commodity Insights; USDA; MARA

Trial results show promise but yield improvements likely not uniform

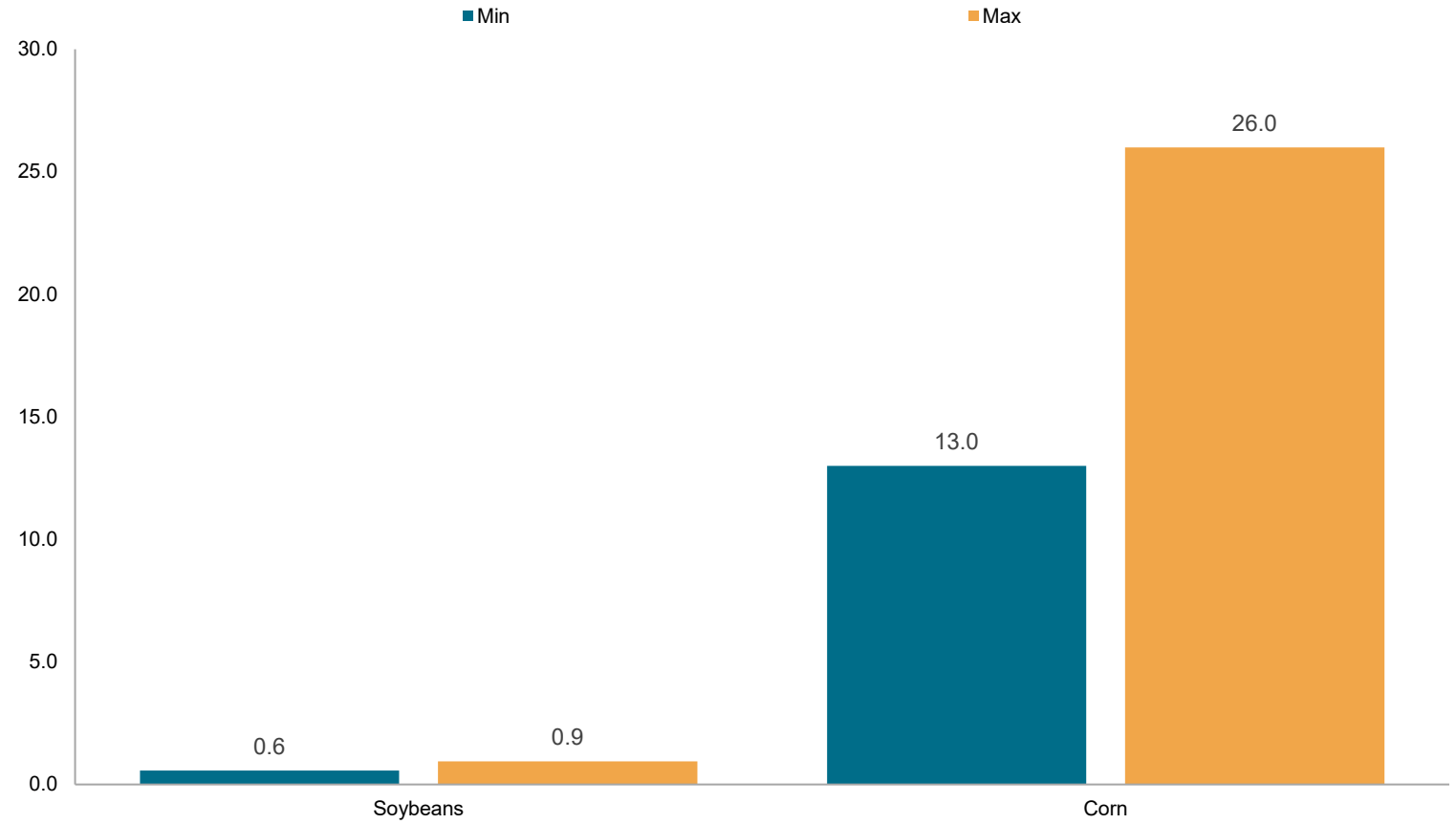
Crop	Yield increase best guess estimate	Factors
GE soybeans	3-5%	• 19 registered varieties • Predominantly HT
GE corn	5-10%	• 142 registered varieties • Stacked HT+IR

- In Aug 2023, MARA reported that pilot programs for GE soybeans & corn increased yields between 5.6-11.6%
- More varieties allow farmers more choice to better fit local environments, thus implying more yield gain potential
- Under good agronomy, HT traits may yield similar to non-GE varieties

Source: S&P Global Commodity Insights; USDA; MARA

GE crops adoption will have a more significant impact on corn production

China production increase from GE soybeans & corn (MMT)



- Assuming 23/24 MY production as the base, 90% GE uptake, and earlier indicated best guess min-max yield increases, this may result in:
  - <1 MMT more soybeans
  - ~13-26 MMT more corn
- Soybean increase will be negligible due to smaller acreage and lower yield gain
- What does China do with all that extra corn? How does it resolve a potential domestic surplus?

Source: S&P Global Commodity Insights

Higher per capita animal protein consumption won’t resolve corn surplus

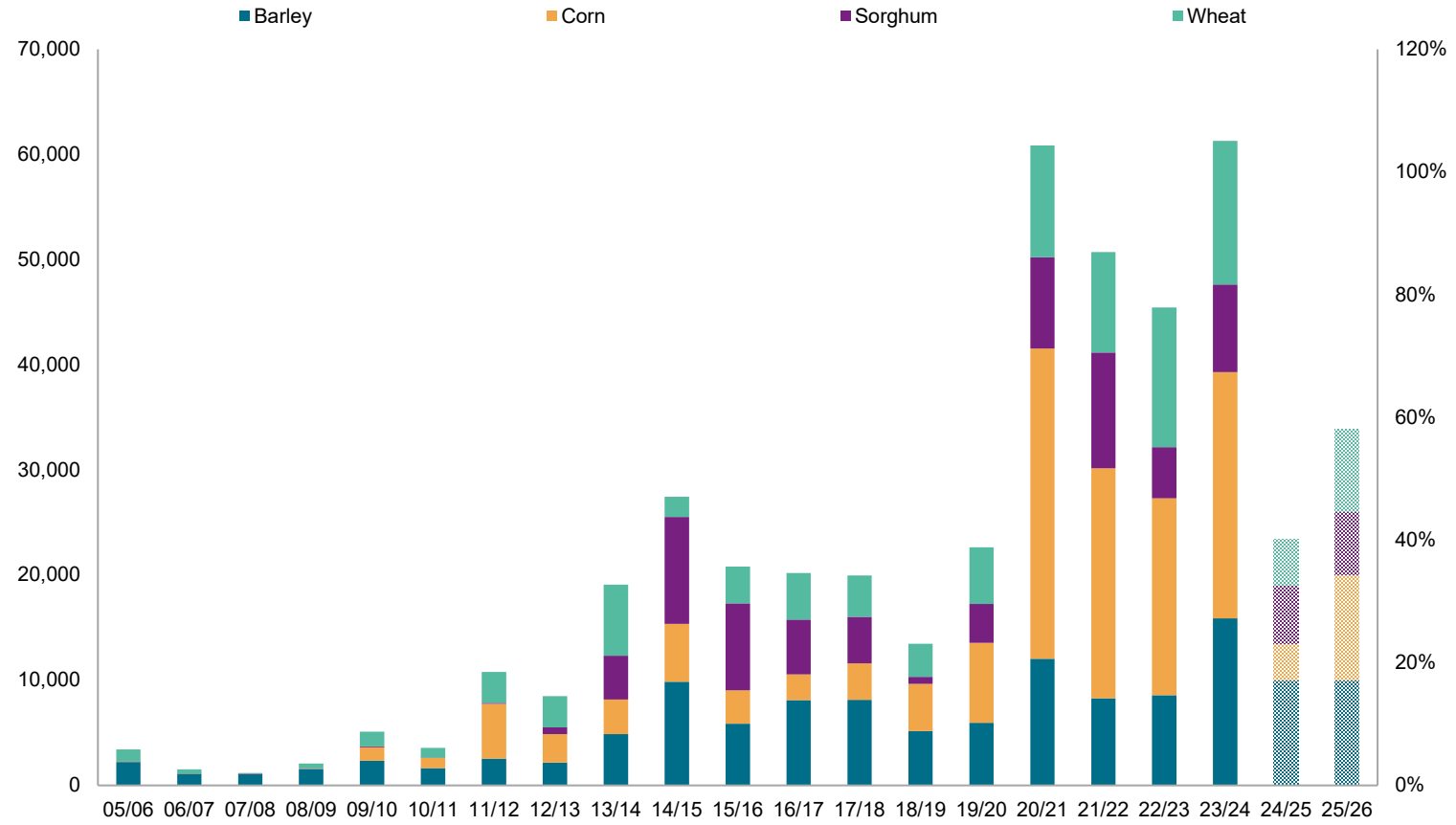
Animal category	Indicative FCR ranges (kg feed per kg meat/eggs)
Fish	1.1-2.0
Shrimp	1.4-2.0
Broilers	1.6-1.9
Layers	2.0-2.2
Pigs (large farms)	2.5-3.0
Pigs (small farms)	3.0-4.5
Beef	6.0-10.0

- Increased wealth and health consciousness in China has been shifting diets from pork to more poultry and seafood
- Poultry and seafood sectors have significantly more efficient feed conversion ratios, further compounded by lower corn inclusion in feed for seafood
- Slower economic growth, and shrinking & ageing population will be additional drag on animal protein consumption

Source: S&P Global Commodity Insights; UN FAO

China’s corn imports may face gradual decline, as will other feed grains

China grain imports ('000 MT)

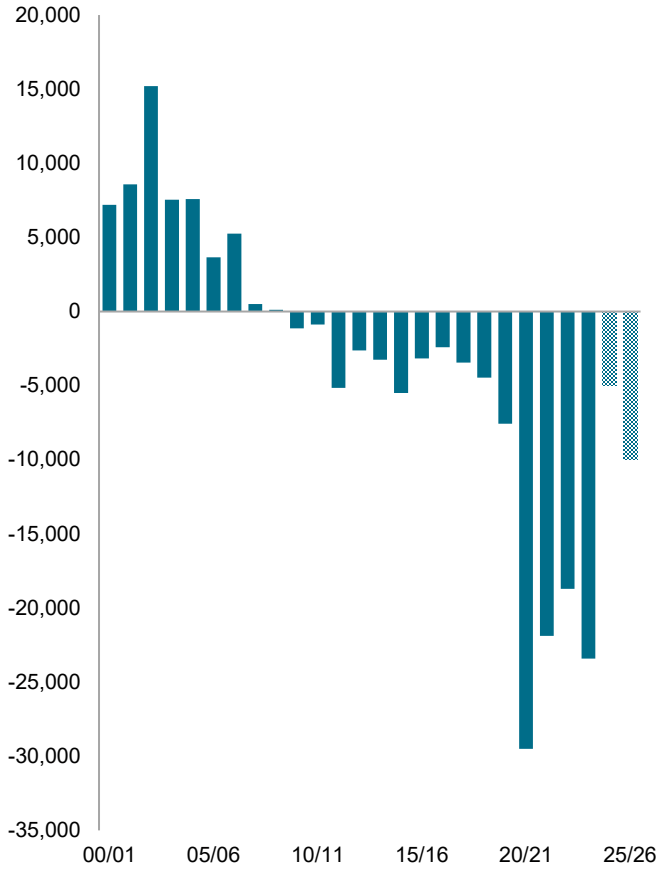


- Imports not just based on market conditions but also need to support farmer and manage grain reserves
- Even with TRQ in place, corn imports may go to zero
- Key signpost for feed grain imports will remain import margins versus domestic corn
- Malting barley, baijiu sorghum and milling wheat imports to be less affected

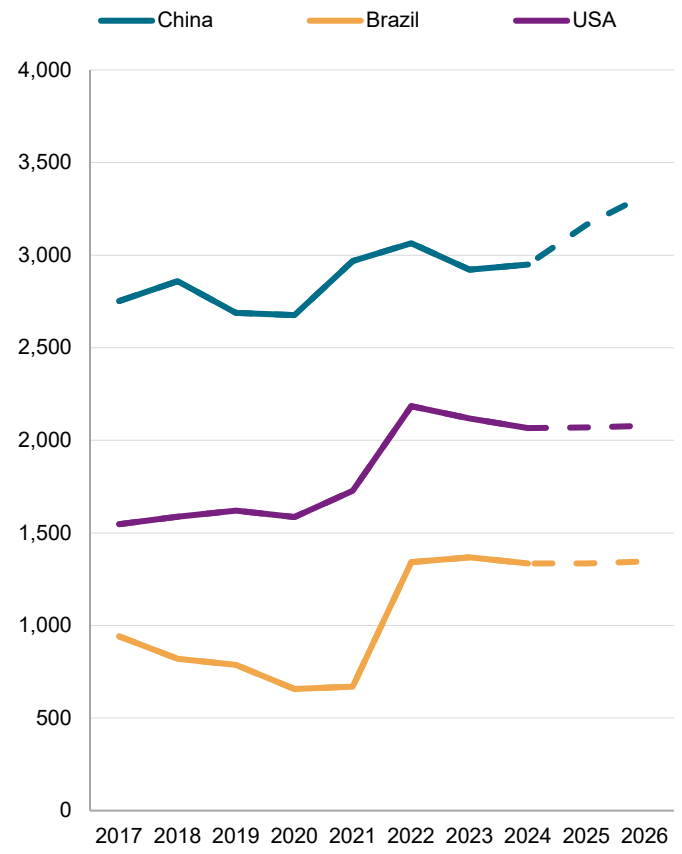
Source: S&P Global Commodity Insights; GTA

China unlikely to return as corn exporter

China net corn exports (MMT)



Corn cost of production (USD/ha)



- Corn costs of production will stay above major exporters, even after accounting for GE yields and lower farm input costs
- China's inland logistics from producing areas to export channels suboptimal as infrastructure mostly geared toward internal distribution
- Chinese GE corn would require approval in destination markets
- Corn exporter status likely to be limited to regional player to fill stopgap needs

Source: S&P Global Commodity Insights; GTA; Costs & Margins

Ethanol may offer limited respite near corn producing regions

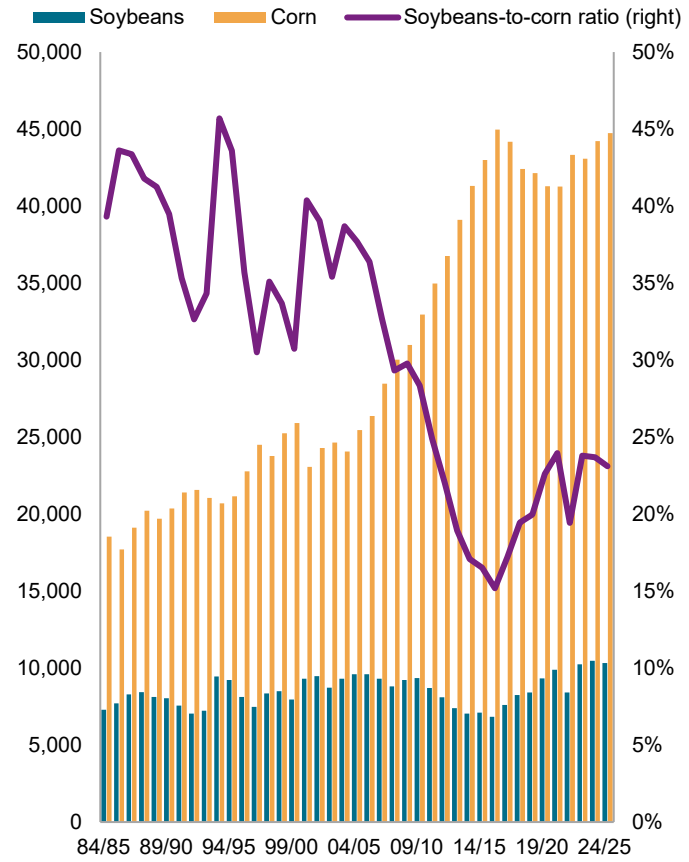
Factors in favour of ethanol	Factors against ethanol
Unused existing ethanol production capacity, including near corn producing areas	China's strategic advantage in rare earth minerals and battery supply chains
Additional DDGS production can help drive down soymeal inclusion rates in compound feed	Of all new car sales around 1/2 were NEVs while 1/3 were EVs
	Minimal enforcement of ethanol blending mandates
	Poor economics for transporting corn ethanol from production to consumption regions

- For 2024, USDA reported that 20 MMT of corn was used for ethanol production with a capacity utilisation of 63%
- Rough calculation using a 90% utilisation rate translates to an additional 8-9 MMT of domestic corn demand
- Only possible with positive blending margins which will depend on crude oil prices

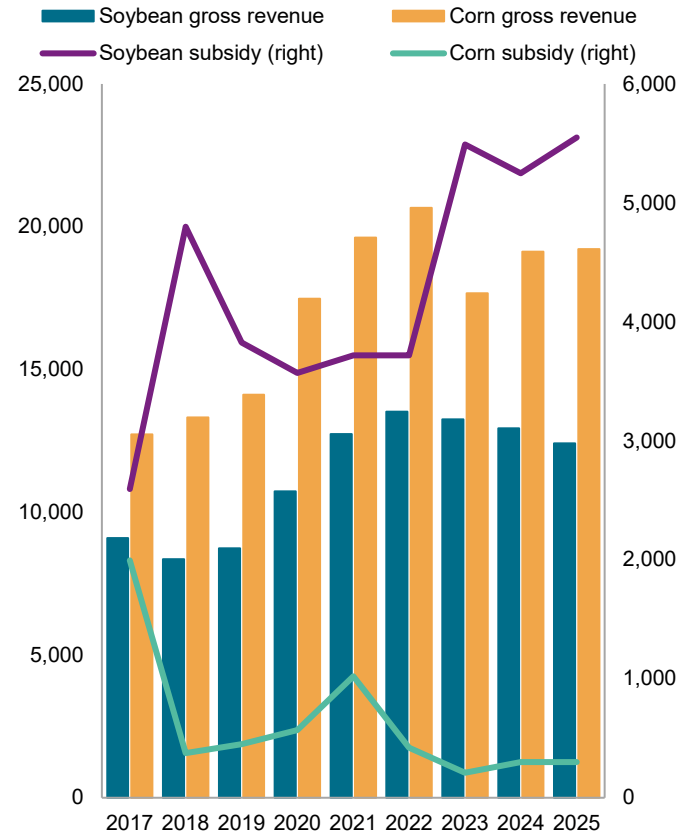
Source: S&P Global Commodity Insights; USDA

Switching corn into soybean acreage could be viable option with sustained government support

China soybeans vs. corn acreage (1,000 hectares)



China soybeans & corn profitability (CNY/ha)



Note: Subsidy amounts are based on Heilongjiang province.

- Area expansion in soybeans has been dwarfed by corn because growing corn is more profitable
- Switching acreage would require significant continued policy support, even more so if GE corn yields outpace GE soybean yield gains
- Assuming 23/24 MY yield and acreage, switching 13-26 MMT of corn production to soybean area would result in around:
  - 30-37% soybeans-to-corn ratio
  - 4-8 MMT more soybeans

Source: S&P Global Commodity Insights; USDA; MARA

Key takeaways

- Biggest uncertainty around GE crops in China remains the speed of adoption
- Full adoption of GE soybeans & corn may result in a domestic corn surplus
- Corn imports would decline and all feed grain imports likely to be impacted
- Unlikely solutions for corn surplus are higher domestic animal protein consumption or corn exports
- Some medium-term relief might come from localised ethanol production
- Most viable long-term solution may come from switching corn into soybean acreage but will only work with sustained government support

Source: S&P Global Commodity Insights

Thank you

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